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AUGUST 1969

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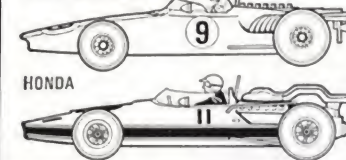
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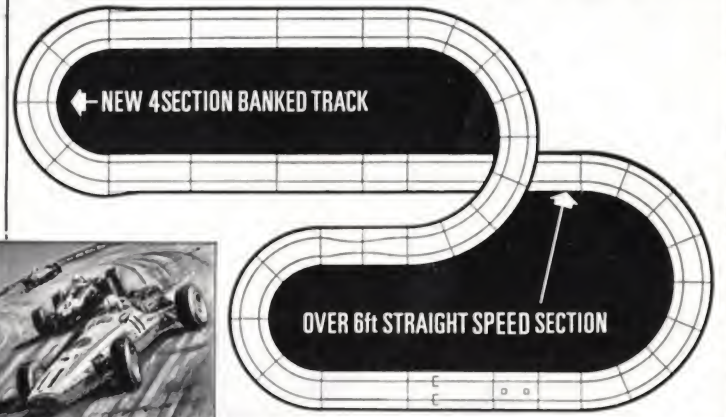
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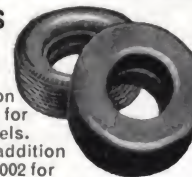


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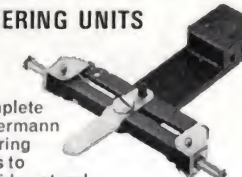
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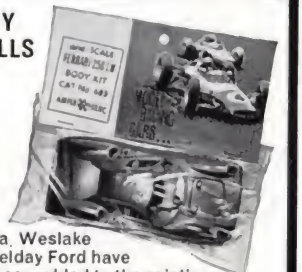
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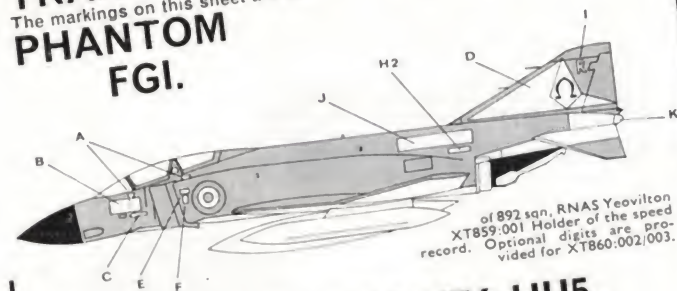
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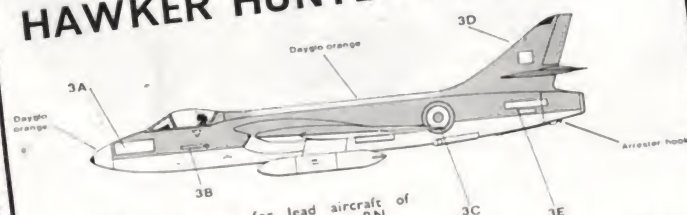
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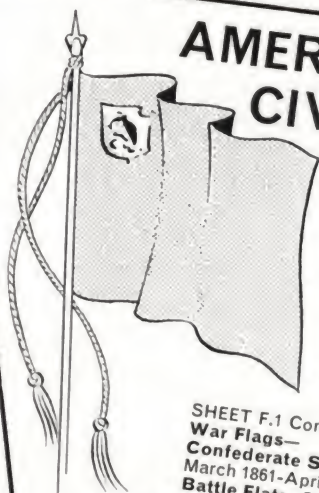
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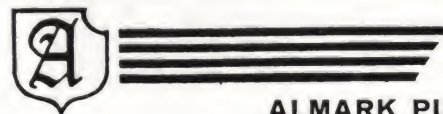
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AIRFIX magazine

## AIRFIX magazine FOR PLASTIC MODELLERS

August 1969

Volume 10 No 12

Editor Chris Ellis

#### Cover Picture

Resplendent in scarlet tunics and pre-1914 style cloth helmets, the Corps of Drums of the 1st Battalion, The Duke of Wellington's Regiment epitomises the heritage of centuries of military history. The Corps of Drums—they double on drums and bugles—are in fact trained infantrymen. They are quite distinct from the Band who are musicians frequently playing at concerts and seaside bandstands away from the Battalion. Scottish regiments also have pipes, hence the title 'Pipes and Drums'. Before World War 2 the Corps of Drums of The Duke of Wellington's Regiment was employed as an intelligence section. During the war, and still today, its role in action is that of defence platoon—guarding Battalion Headquarters. Nowadays, in peacetime, they take part in parades and blow bugle calls in barracks. The Duke of Wellington's Regiment is one of only three English regiments who have not been either amalgamated or disbanded since the end of World War 2. The others are The Cheshire Regiment and The Green Howards. The Corps of Drums is pictured practising in Osnabrück, West Germany, when their Battalion was part of Rhine Army. During the past year they have been stationed in Hong Kong.

(Picture by Hugh Howton)

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The new Airfix RAF Emergency Set vehicles and personnel go into action. Conversions from this kit appeared last month and more are to follow in future issues.

## NEWS FROM AIRFIX

The world's greatest value in construction kits

- **RAF Emergency Set**
- **OV-10A Bronco**
- **Maudsley Paddle Engine**
- **BMW R69 Motor Cycle**

**M**ODELS of two military vehicles that were built in thousands during the 1939-45 War are the main features of a new Airfix OO scale RAF Emergency Set in Construction Kits Series 2.

The Austin ambulance built on a K2 chassis was standard equipment for the RAF and the British Army—it also served with the French, Norwegians, Russians and Americans (on reverse Lease-Lend). 13,000 ambulances were made. The K6 chassis of the crash tender was also used for REME workshops, 5 ton cranes, signals and breakdown trucks and over 10,000 general service 3 tonners.

The 121 pieces of this set include twelve RAF personnel—two drivers, stretcher party, MO and aircrew patient and a fire party of six. Uniforms and special equipment are authentic—even the service issue forage-caps are worn in a manner characteristic of RAF ground crews.

With so many variations of vehicle types and two such long-lived standard chassis, scale modellers will find many uses for this Airfix kit. Price is 3s 9d.

**T**HE latest Airfix 1:72 scale construction kit is of the twin-engined North American OV-10A Bronco, a forward air control aircraft at present in service in Vietnam.

This twin-boom aircraft won a US Navy design competition and the prototype first flew on July 16, 1965. Subsequently, 185 were made for the US Army and 76 for the Marine Air Corps. Production aircraft are powered by 715 hp Garret AiResearch turboprops developing 279 mph. Oddly enough, the Navy appears to have lost interest in the Bronco.

The 76 piece Airfix kit includes a suitably clad crew of two and a variety of optional external stores to supplement the standard four 7.62 mm sponson mounted machine guns. The fully detailed tri-cycle undercarriage may be modelled in either the raised or lowered positions.

Painting instructions are included in the kit together with two complete sets of transfers—USAF and US Marines. This latest release in the Airfix Aircraft, Series 2 is priced at 3s 9d.



The new 1:72 scale Bronco kit.

**A**IRFIX have issued another intriguing model in their Museum Models Construction Kit Series—Joseph Maudsley's 1827 oscillating engine. Only a few years after the fall of the Napoleonic Empire, when the use of steam for locomotion was in its infancy, Maudsley patented a two-cylinder engine designed to power side-wheel paddle ships. It became one of the most popular engines for this use in the nineteenth century and developments of the design were installed in Brunel's famous ship the *Great Eastern*.

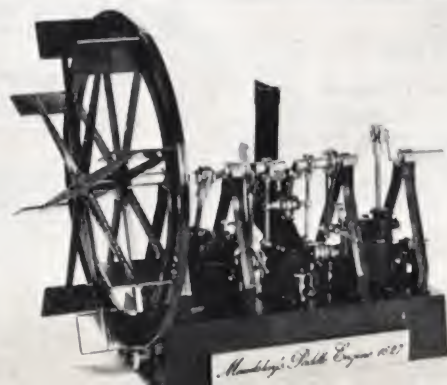
The 109 piece Airfix kit makes a fully detailed working model of Maudsley's 1827 engine. The kit includes a DC motor and drive system acting on a 6½ inch diameter wheel fitted with eight paddles. The crank shaft has properly assembled bearings and straps for the moving piston and valve rods and reversing gear, and the steam pipes from the central steam chest have detailed flanges and studs.

The motor, battery and switch are grouped out of sight under the base which supports excellent representations of the four cast iron frames. The finished model is nine inches long and stands over seven inches high.

The kit includes an instruction leaflet with six exploded

*Continued on page 537*

The Airfix Maudsley Paddle Engine on its display stand.



## NEW BOOKS REVIEWED FOR MODELLERS

### Three from America

**THE FORTUNES OF WAR**, by Allan G. Blue, published by Aero Publishers Inc, Fallbrook, California. Overseas distribution by W. E. Hersant, 228 Archway Road, London N6. Price 23s 6d.

**T**HIS book concerns the unit history of the 492nd Bomb Group on daylight operations in the European theatre during World War 2. The 492nd was one of the first units flying Liberators from the UK to be left in natural metal finish. As a result, the Germans rather naturally picked on this group, and they suffered rather heavy casualties.

From their airfield at North Pickenham this group took part in some of the most famous raids of the war including that on Stettin in June, 1944, and another on Politz-Tutow in the previous May. The book contains many personal experiences of the aircrew who took part and the many excellent illustrations, most of which appear to be previously unpublished. There are also several scale drawings showing camouflage schemes of the group's Liberators.

**THE B-58 HUSTLER**, by Douglas H. Robinson, published by Arco Publishing Co Inc, New York. Available from W. E. Hersant, 228 Archway Road, London N6. Price 26s.

**T**HIS is one of the most interesting books which it has yet been our pleasure to review in the Arco 'Famous Aircraft' series. Apart from giving an interesting introduction and development story for the Hustler, the author adds considerably to our knowledge of the operations on which this aircraft is used. The development of the aircraft's mission pod makes a fascinating story. Model makers will be delighted with this book as the photographs show in considerable detail the complexities both inside and out of the aircraft.

**THE LOCKHEED CONSTELLATION**, by Terry Morgan, published by Arco Publishing Co Inc, New York. Available from W. E. Hersant, 228 Archway Road, London N6. Price 26s.

**T**HE best feature of this book is the numerous photographs, all of which will be of interest to the model maker, aviation historian and the airline enthusiast. The Constellation, one of the most important airliners to be bought at the end of the war and consequently holding an important position in the development of post-war airline services, is justly dealt with both pictorially and in the copy.

Almost every airline using this aircraft is depicted in photographic form and so are many of the variants used both by the USAF and US Navy.

### Racing planes

**RACING PLANES AND AIR RACES**, Vol 5 1969, by Reed Kinert. Published by Aero Publishers Inc. UK Agents: Hersant Ltd, 228 Archway Road, Highgate, London N6.

**B**RINGING the series on US racing aircraft right up to date, Reed Kinert has provided another interesting book full of facts, illustrations and several three view drawings on the latest racing mods. Both one off experimental aircraft and conversions to existing types such as the Mustang, Corsair, Bearcat and Harvard are included together with the results of the 1968 Nationals.

This book has perhaps a limited appeal in Britain but is nevertheless a comprehensive guide to American air racing and can provide the enthusiast with many interesting conversions to existing kits. Colour schemes alone are strictly for the gaudy!

August, 1969

### RAF squadrons

**ROYAL AIR FORCE UNIT HISTORIES, 1-200 SQUADRONS**, by J. J. Halley. Published by Air Britain, 66 Long Ridings Avenue, Hutton, Brentwood, Essex. Price 18s 6d.

**T**HIS is the first of a series of four monographs by Air Britain on this subject in which all of the RAF's squadrons will be tabulated. It is written by enthusiasts for enthusiasts and as such reflects the accuracy and attention to detail that one would expect.

Mr Halley has specialised for many years in the study of squadron histories. The compilation of the many individual stories into book form is of the greatest value and both the author and publishers are to be congratulated on an excellent volume.

Each squadron is dealt with in numerical order and most of them have a photograph of one particular type of aircraft which served with the unit during its history. A list of aircraft types which served with the Squadron is also given.

The next volume to be published at the end of the year will deal with the remaining squadrons not covered in this publication. It is later hoped that each squadron will be dealt with from the model maker's point of view by having camouflage and unit markings listed together with a large number of aircraft serials for each unit.

Although produced by amateur enthusiasts, there is nothing but professional skill in this book. It contains a wealth of detail and for the price of 18s 6d is, if anything, underpriced.

### World War 2 weapons

**BRITISH AND AMERICAN INFANTRY WEAPONS OF WORLD WAR 2**, by A. J. Barker.

**ALLIED BAYONETS OF WORLD WAR 2**, by J. Anthony Carter. Both published by Arms & Armour Press, 677 Finchley Road, London NW2. Price 25s each.

**T**WO more volumes in the 'Illustrated Studies in 20th Century Arms' series, each is uniform in size and format with the *Tanks of World War 1* book reviewed last month. There are pictures on nearly every page with descriptive text and much useful information for anyone interested in small arms. We found the Bayonets book slightly the more interesting of the two, probably because much of the information therein will be almost entirely new to the average reader. Countries covered include Britain, USA, USSR, India, Australia, France, Belgium, Holland, Denmark, Norway, Poland, and Greece. There is a brief overall history of the subject with detailed histories and data for each individual bayonet illustrated. Appendices include hints for collecting bayonets among much other information.

The book on infantry weapons also has pictures on nearly every page and mainly deals with small arms but also includes mortars, machine guns, grenades, flame-throwers, and anti-tank weapons. A vast amount of relevant data is given together with brief histories of everything illustrated and general histories of each class of weapon. We noted that one picture showing bayonets was inverted relative to its caption. Also the text on the M1917A1 Browning machine gun appears to be wrongly illustrated with the M1919 weapon.

### Army transport

**TRANSPORT OF THE BRITISH ARMY, 1939-45: Part 1 Tank Transporters and Recovery Vehicles**, by M. Conniford. Published by Bellona Publications Ltd, Hawthorn Hill, Bracknell, Berks. Price 8s plus 6d postage.

**T**HIS is a further title in the useful Bellona reference book series following a similar format to previous books which dealt with German SP equipment. This one will be most useful to modellers since it covers all British tank transporters and recovery vehicles with pictures, data, and brief histories of each. Since auxiliary military vehicles are much less well-known than tanks, this handy book will be an excellent addition to the libraries of military enthusiasts and modellers at its very modest price. We were pleased to note that the standard of reproduction is higher in this book than previous Bellona books.

*Continued on page 537*





Typical scene on the many daily fuelling exercises between fighters of the USAF based in Europe and tankers of the Air National Guard is this moment of rendezvous with a Boeing KC-97L of the Texas Wing about to refuel an F-4D Phantom. (All photos USAF Official).



WHEN the worldwide USAF tanker force moved hurriedly to South East Asia to support the United States operations in Vietnam, the remaining fighter units in Europe found themselves with a problem.

Although they could divert to other airfields in case of fuel shortage or other emergency there was a specific need for in-flight refuelling to be available to cope with some of the longer missions flown by USAF crews from stations in the UK.

The need was met by the Air National Guard, which readers will remember from my previous article, is the auxiliary air force of the American forces composed of citizen aviators coming under the direct jurisdiction of the State Governors. In fact the ANG is almost independent of the regular forces as I saw when I visited their temporary base at Rhein/Main in Germany recently. So far did this division go that the regular units on the base charged the ANG for all servicing, whilst the ANG made out a bill for the regulars when they refuelled their aircraft in flight!

#### Rotation

SINCE about 1964 Air National Guard Tanker Wings using Boeing KC-97Ls have flown daily missions in support of the Tactical Fighter units in Europe. They are now the only in-flight refuelling aircraft used by the Americans on this side of the Atlantic and seven units are involved, which work on a rotation basis as part of their annual training.

Each participating unit spends a fortnight at Rhein/Main

every five months. They bring with them five aircraft, five five-man crews and a number of ground crews, making a total of 67 members. Out of these, 20 per cent of the crews are full-time ANG members but the rest are from all manner of different professions.

For example, the captain of the aircraft in which I flew, Lieut-Colonel Frank J. Morrissey, was a salesman for electrical and plumbing contractors, his co-pilot, Major Yaeger, was a Post Office employee driving rural collection services in remote parts of Ohio, the navigator, Lieut-Colonel Dickson, was a Doctor of Science employed at Wright-Patterson Air Force base on aeronautical research, and the flight engineer, Sgt Kretchek, and the boom operator, Sgt Guist, were full-time Guardsmen.

#### Explaining the mission

THE crew came from the Ohio Air Guard—the 160th Air Refuelling Group, Clinton County Air Force Base, Wilmington. At the time I met them they were flying three or sometimes four sorties of two and a half hours each every day. After introductions we went into the briefing room to get the latest weather, rendezvous points, radio call sign information and fuel load requirements.

The briefing was short and to the point—they had all done this type of job many times before. The hook-up was to take place at 18,000 feet and we were to receive four F-4 Phantoms from the 36th TFW at Bitburg. It was here that I learned how the ANG had taken over the important role of being the only unit providing in-flight refuelling in Europe and how they had done the job so effectively for several years.

'Operation Creek Party', as it was known, was the code name that covered the whole series of missions. It was the

**Below:** Typical night scene at Frankfurt's Rhein/Main airfield. The C-141 Starlifter is one of the most frequent visitors at this busy terminal for all of the USAF's trans-Atlantic freight and passenger services.



original name given to the first ANG flights and has stuck ever since. In the early days the KC-97 tankers used to patrol at a given height and the fighters had to hook on when they required extra fuel. The original job was one of emergency refuelling when required and tankers often used to return to base without having made a contact. Now, however, this refuelling is standard training for all USAF Tactical Fighter Wings in Europe and the tankers only fly as part of a definite programme. The all-important ability of operational crews to refuel in flight has become an important part of daily training and 'Creek Party' has expanded accordingly.

#### Four turning, two burning

OUT on the flight line the crew got ready to join the hundreds of other aircraft operating from the civil side of Frankfurt's Rhein/Main airport. This is one of the busiest airfields in Europe and operates both civil and mixed military traffic in the same pattern. It is being greatly expanded at the present time and at the moment the USAF occupy one half of the field, with their own ground control whilst the in-flight operations begin on the civil side from the time that the aircraft line up for take-off on either of Rhein/Main's busy twin runway system.

Both the four 3,500 hp Pratt & Whitney engines and the two J-47 jet engines were run-up at the holding point and the heavily laden tanker turned on to the runway for take-off. The addition of the jets on these aircraft has added a lot to their performance, particularly at take-off, and the extra power gets them away from shorter fields with easier margins, provides a greater climb performance and above all has prolonged the life of the aircraft. The use of the jets allows the tanker to fly at comparable speeds with the jet aircraft with which they work. In fact the idea was an Air Guard innovation and the engines come from redundant KB-50s.

#### On station

AFTER starting engines, Col Morrissey took the KC-97 out to the holding point where the jets were started. Waiting for two C-141 Starlifters to clear the runway, he went quickly through the pre-take-off check list and turned on to the runway with a rapid call 'Taxi 12—take-off' to the Rhein/Main tower. Loaded with 32,000 lb of JP4 jet fuel, the KC-97 took what seemed to be a long time to unstick but once away the climb was brisk and we were soon passing the Kirn beacon and turning on to the refuelling area passed the Rudeseim check point under the control of Eiffel Radar.

The pilot called radar control and at 18,000 ft 'Taxi 12' our radio call sign announced that we were on station and ready for the receiving fighters to come and get topped up.

The pattern flown for the mission was south of the Moselle valley and consisted of a 'racetrack' course of about 50 miles in length followed by a slow turn at each end of the oblong. The fighters—F-4Ds from the 36th AFW at Bitburg—homed on to the tanker's beacon and were soon spotted on the radar operated by the navigator.

At ten miles range the boom operator prepared for his task of passing at least 8,000 lb of fuel to each aircraft within a few minutes. The 'all-flying' boom was lowered and the F-4Ds approached from astern of the tanker ready to be called in for the hook up.

#### Boom control

SGT GUIST explained how the boom was controlled from operator's position under the tail of the aircraft. By laying face downward on an upholstered couch on the floor

August, 1969



**Top:** At 18,000 feet over the Moselle valley in Germany fighters of the 36th Tactical Fighter Wing, Bitburg, edge up to the tanker to take on fuel. Whilst one aircraft is being refuelled the other holds off on the starboard side of the tanker awaiting its turn. **Above:** Come and get it! Boom operator Sgt Guist directs the F-4 into position at the same time as controlling the boom into the refuelling slot on the fuselage behind the pilot's cockpit.

of the tanker a good view could be obtained of the receiver as it approached. A control column of smaller dimensions to that in the cockpit but operated in exactly the same way, was fitted on the starboard side of the operator's position and the boom was 'flown' by the V-shaped fins at its rear.

Other controls showed when the boom was connected and the fuel flow. The actual control of the fuel passing from one aircraft to the other was in the hands of the engineer who had a panel beside the tanker's engine instruments. Once the boom was in position the engineer released a valve to control the fuel flow rate and the quantity to be passed. He could also dump fuel in case of emergency without reference to the rest of the crew.

The navigator had by this time passed bearings to the fighters so that they could join up with the tanker. They approached from astern and then, as the lead aircraft came up under the tail, the other pulled away to starboard.

The Phantom's refuelling point is behind the cockpit and both the pilot and the boom operator have to work closely together to get the probe in the right spot. The boom operator, who is in radio contact with the fighter, passes his instructions by radio. 'Up two, forward two, steady' and 'contact'. Immediately the connection is made the engineer releases the valve and the fuel is passed within two minutes.

Once the refuelling has been completed the F-4 breaks the

*Continued on next page*



# Markings for the Hunter

BY RICHARD E. GARDNER



Above: Four Royal Rhodesian Air Force Hunters, RRAF 117, RRAF 122, and RRAF 119 on left from bottom to top, with RRAF 127 in the distance on the right (RRAF Official photo).

## In the Air—continued

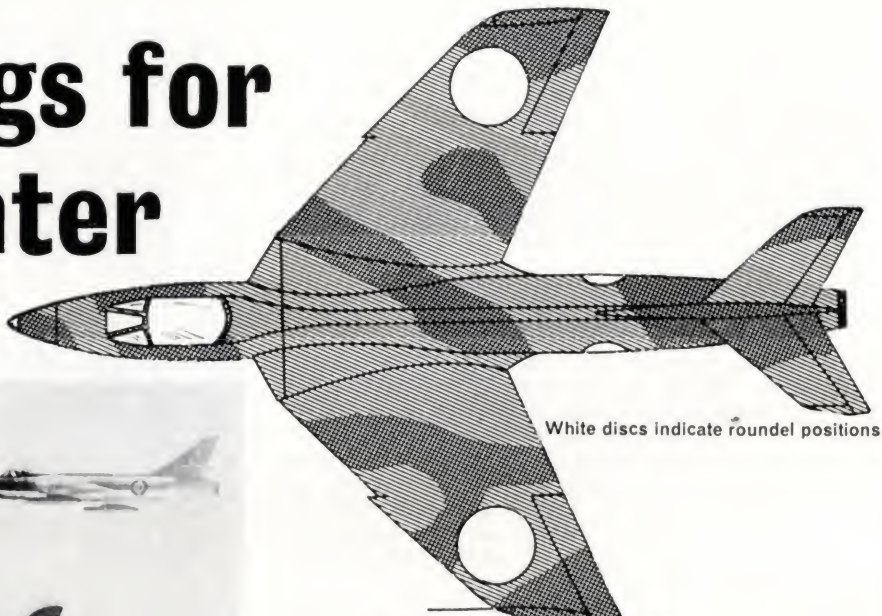
connection and pulls up on the port side of the tanker whilst the next aircraft in line gets into the slot under the tail. Normally there are no problems; fighters refuel and fly off as part of their everyday routine, but on this occasion the second F-4 to join up with the tanker could not get the flap covering the refuelling valve on the aircraft to open. This called for very unconventional methods and Sgt Guist corrected the fault by literally banging the door open. He brought the boom down with a resounding smack on the F-4's fuselage which shook not only the tanker but caused the fighter to bounce away from the tanker by about twelve feet. Repeating the dose several times caused the faulty door to open and as Sgt Guist remarked that it was a good thing that the top decking around the refuelling area on a Phantom was armoured.

Four refuellings were made during the sortie. Two of the aircraft did not arrive and we found two strays who were looking for another tanker in the area.

The return to Rhein/Main was enlivened by the many aircraft landing and taking off from the busy airport. Finally, after having flown a holding pattern, the KC-97 was lowered on to the runway.

Although they would like to get KC-135s to replace their ageing Stratotankers, the members of the 160th Air Refuelling Group had a great faith in the older aircraft. Colonel Cattran, the officer commanding the unit, listed other Air Guard Units taking part on the rotational scheme of a week once every five months. These were:

126th Air Refuelling Wing, Illinois  
136th Air Refuelling Grp, Illinois  
128th Air Refuelling Grp, Wis  
136th Air Refuelling Grp, Texas  
134th Air Refuelling Wing, Tenn  
136th Air Refuelling Grp, Texas



Camouflage pattern for all aircraft drawn opposite

THE Hawker Hunter F6 remains operational with the RAF at Chivenor and as a single seat trainer at several OCUs. It also remains in service as a combat fighter with Iraq, Lebanon, Jordan, India, Saudi Arabia, and Switzerland. The similar FGA 9, with tail parachute, is still in RAF service with Strike and Air Support Commands and also on detachment to Air Forces Gulf and 20 Sqn in Far East Air Force. In addition the Hunter 9 has been exported to Chile, Rhodesia, Kuwait, Jordan, and Singapore.

As RAF Hunters are gradually replaced by Lightnings, Phantoms, and Harriers they go either to OCUs for use as trainers or into store, or are re-built by Hawker Siddeley for export. There are still hundreds of Hunters in service out of a total of nearly 2,000 built. There is therefore great scope for finishing the Airfix Hunter model in any of dozens of schemes, and four of the most typical are shown here. The Mk 9 variants require a modified tailpipe with parachute cover as shown in the drawings, and this can be effected with plastic putty. Also in the Mk 9s an extra blade-type aerial is needed aft of the cockpit which is simply added from a sliver of plastic card. With the addition of suitable wing stores, these models are otherwise simple 'paint conversions' utilising the kit parts unaltered.

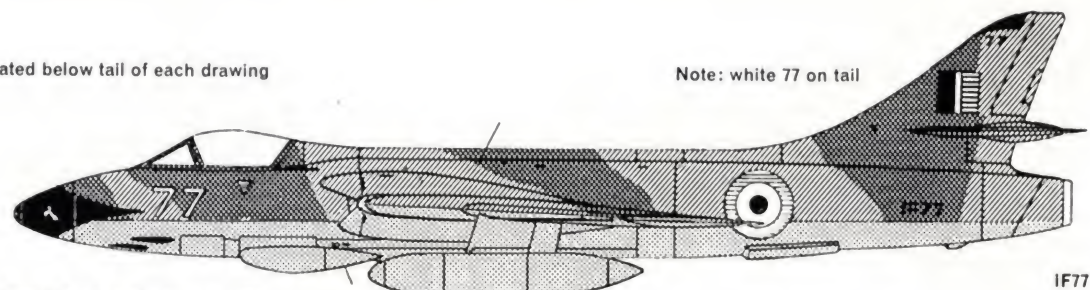
For Belgian markings you can use those made by Inter-Maquette (137 Chaussee de Wavre, Brussels 5, Belgium), while the British transfers can be obtained from several sources including left-overs from other kits. For the attractive Rhodesian markings I suggest the use of spare 'C' Type roundels with the spear painted on before they are removed from the backing sheet.



Above: A Hunter 6 of the Belgian Air Force, IF 15, in June 1961, finished as in the drawing opposite but with the addition of red and white checks (two rows above, two below) on the wingtips. The serial IF 15 is also repeated on the tops of the wings close up to the rear roots (Richard L. Ward photo).

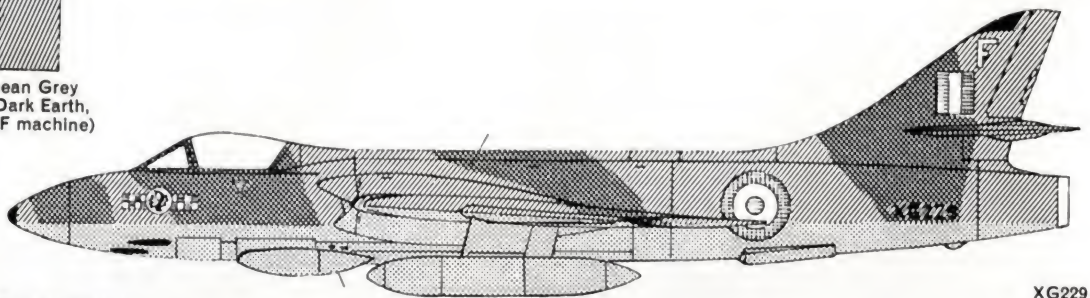
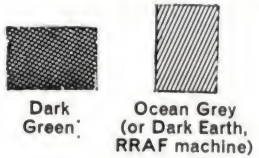
Note: serials repeated below tail of each drawing

Note: white 77 on tail



Hunter F6, No 7 Sqn, Belgian Air Force, 1960  
Nose marking on black flash shown below in sketch 1

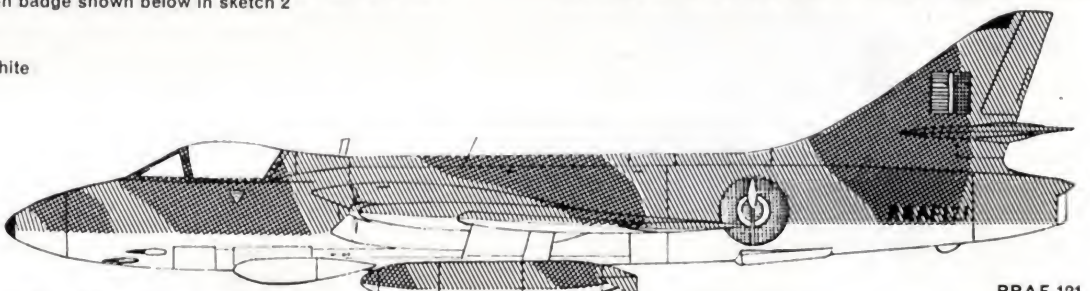
Standard RAF camouflage scheme: Ocean Grey/Green/Silver



Hunter F6, No 92 Sqn RAF, 1958  
Markings shown prior to formation of 'Blue Diamonds' aerobatic team  
Details of squadron badge shown below in sketch 2

Standard RAF camouflage scheme: Ocean Grey/Green/Silver

Note: all serials white

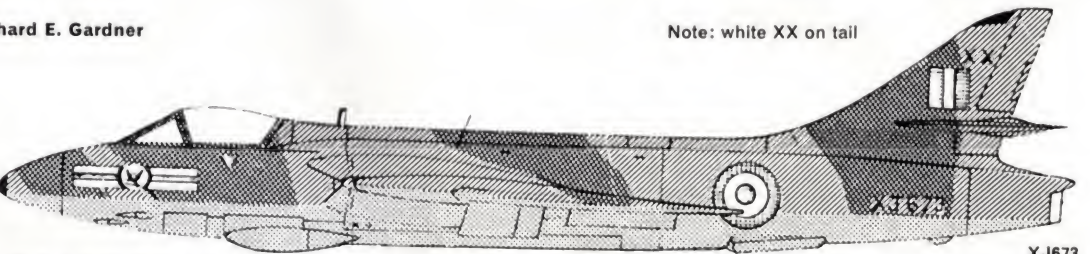


Hunter FGA 9, No 1 Sqn, Royal Rhodesian Air Force, 1969

Dark Earth/Green/Sky  
Red/white/blue 'C' Type roundel with silver spear and brown shaft

Drawings by Richard E. Gardner

Note: white XX on tail



Hunter FGA 9, No 20 Sqn RAF, Tengah 1969 (Far East Air Force)  
Details of nose marking below, sketch 3

Light grey undersides



1. No 7 Sqn, Belgian Air Force



2. No 92 Sqn  
Red/yellow check with blue/yellow cobra, red leaf, white disc



3. No 20 Sqn  
Light blue/red/white/red/light blue bands  
Blue bird on yellow rising sun with black sword and yellow handle



## Part 2: The 'Universal' type

IT was considered uneconomic and unnecessary to build separate versions of a basic machine to fulfil a variety of roles, so consequently in 1940 a Universal type of carrier was produced for all purposes, with special requirements met by minor modifications. Designated **Carrier, Universal, Mark I, II and III**, this vehicle remained the standard combat carrier throughout the war.

The demand for the Universal Carrier far exceeded the capacity of the United Kingdom and production was undertaken by Australia who supplied their own army and shipped 1,500 to China; Canada who built 33,987, supplying more than a fifth of the British Carrier needs and New Zealand where a small batch was built for home use. In addition to the production of the Universal Carriers, both Canada and the United States undertook experimental vehicle work in the hope of designing a more satisfactory vehicle, it being an accepted fact that the Universal was overloaded and under-powered. In the USA the result was the T16, basically the



Universal with a larger chassis, four bogie wheels and a larger engine. The original vehicle was designated Cargo Carrier T16 but was redesignated Universal Carrier T16 for the sake of uniformity with British nomenclature. It was designed in 1942 partly for British requirements and partly for US Army operations against the Japanese. The British were supplied with 2,625 T16s in 1944 and 604 in 1945. The T16 was not considered entirely satisfactory by the British General Staff, in spite of its many improvements over the Universal, as it was mechanically unreliable and had a payload even smaller than the Universal. A modified version, the T16E2, was projected and built late in 1945, which had altered bogie spacing to reduce track wear. Few of these T16 vehicles were used by the British operationally.

In Canada a much more promising machine known as the Windsor was introduced in 1943 by the Ford Motor Co of Windsor. Although this vehicle incorporated 90% Loyd Carrier components its design was based on that of the Universal Carrier, but it was much larger and more powerful. It was specially intended to replace the Loyd Carrier as a gun towing vehicle but was so satisfactory in early trials that its use was seriously considered in the role of the Universal Carrier. Due to mechanical trouble after the design had been approved and production had begun (at the rate of 500 a month), the Windsor was only in service in small numbers by the end of the war as a towing vehicle for the 6 pdr anti-tank gun with the 21st Army Group.



**Top:** Carrier Machine Gun No 2 Mk I (described in Part 1) showing stowage arrangement for machine gun, crews' rifles, and other equipment. Note folding back-rest, open on left. **Above:** Same vehicle from front.

### The Loyd Carrier

The Loyd Carrier was introduced in 1940, built by the firm of Vivian Loyd and Co Ltd, Captain V. Loyd having left the firm of Vickers to establish his own concern after the death of his partner, Sir John Carden, in an air crash during 1935. Designed for a variety of roles which included the carriage of weapons ranging from machine guns to anti-tank guns and the transport of troops and stores, the chassis was composed largely of Ford commercial vehicle parts to assure cheap and rapid production. Unfortunately at the time of its appearance in 1939-40 the demand for light tracked carriers was limited. Initially the Loyd Carrier was only used by the British Army as a troop carrier due to its advantage of having accommodation for eight men. However it was later adopted as a towing vehicle and proved very popular. It was also developed to fulfil other ancillary roles, such as cable laying, and for carrying slave batteries. Its major importance however arose from the sudden urgent and larger requirements for mobile anti-tank guns, particularly in the Western Desert fighting.

Due to the demand for the use of the Loyd as a towing vehicle for the 2 pdr and (later) 6 pdr gun a requirement arose for improved load capacity and tractive ability, both of which were considered inadequate for a gun tower. Work

**Below:** Carrier Bren No 2 Mk I; compare with Machine Gun Carrier above.



was undertaken therefore to develop several improved models during 1943, but due to the continued demand for the Loyd as a 6 pdr gun tractor in quantity, the mechanical weakness of this vehicle was accepted and no modifications were allowed to be incorporated that would slow or delay production of the machine.

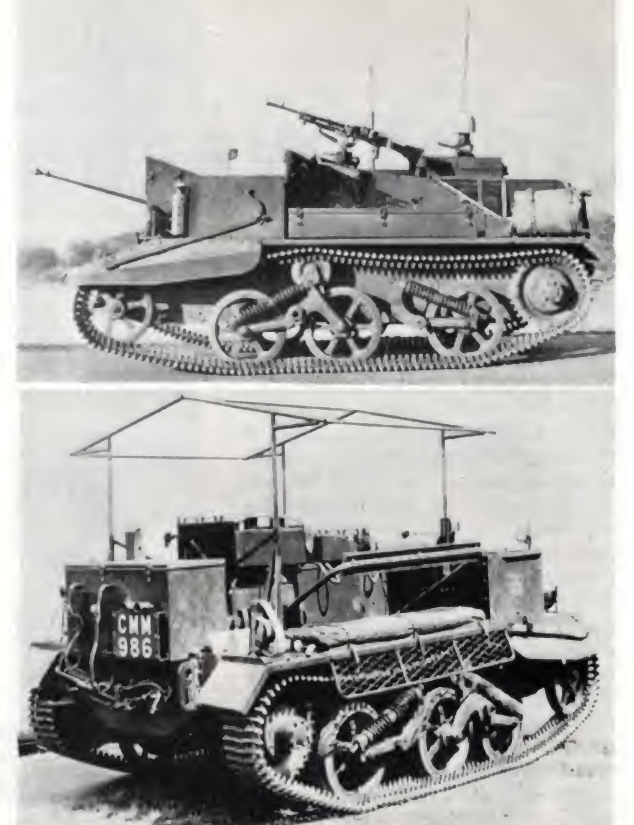
The towing requirement for which the Loyd was chosen could well have been undertaken by the Universal Carrier, however, and the Stacey towing attachment was fitted to all Universal Carriers (except the OP version) built in 1943, enabling this vehicle to tow the 6 pdr anti-tank gun in an emergency over short distances. Nonetheless the Loyd Carrier was preferred by the troops because its steering and handling were not as complicated as in the Universal. The limitation of carriers to these two basic types considerably reduced production problems, especially as there were a number of components common to both vehicles. Production of the Loyd Carrier was also undertaken by the Ford Motor Co of Canada.

### CARRIER MODELS DESCRIBED

HAVING looked at the broad background to the story of British Carrier evolution and development, we now start examining every carrier model in more detail, keeping as far as possible in chronological order and continuing for the next few instalments. We start with the Carden-Loyd carriers of 1928.

**Carden-Loyd, Carrier, Machine Gun, Mark VI:** Developed from a series of one and two man machine gun carriers or tankettes, the Mk VI was introduced into service during the latter part of 1928 as the standard machine gun carrier. This two man machine soon achieved popularity as a well designed, and cheap vehicle to build. Various models of the Mk VI were exported abroad, where in some cases they were built under licence, often developing into a considerably

**Below:** Standard production Loyd Carrier showing the front transmission and canvas tilt which characterised this design. **Bottom:** Thornycroft-built Universal Carrier Mk I in use with a Canadian regiment. (All photos Imperial War Museum).



**Top:** Carrier, Scout, Mk I (described in Part 1), showing Boys anti-tank rifle and radio equipment. **Above:** Pilot model of the Carrier, Cavalry, Mk I (described in Part 1), showing wireless equipment and frame for tilt. This latter was rarely used in service.

different design to the original machine. Examples of this were the Italian versions CV33 and CV35 (Carro Veloce: Fast Tank) that were developed from the British model CV29 built under licence. The CV33 and CV35 models were in turn offered for export by Fiat-Ansaldo.

During the period from 1930 to 1932 a little experimental work was done to improve the fighting efficiency of the Mk VI. This took the form of experiments with air-cooled engines, modified suspensions, and better armour protection. Though various prototypes incorporating these improvements were built, interest in this class of vehicle declined and further development was discontinued, not to be revived until 1935. Details: Crew, 2 (driver and gunner); Armament, 1 Vickers .303 machine gun; Engine, Ford Model T, 22.5 hp; Max road speed 28-30 mph; Armour, 6 mm - 9 mm; Weight, 1.5 tons.

**Carden-Loyd, Carrier, Machine Gun, Mark VI (Indian Pattern):** Two special models of this type (B11E3 and B11E4) were produced during 1929. With these machines, the hull, engine, transmission and suspension were unaltered, but special arrangements were made to render these machines more suitable for use in hot climates. This included a modified cooling system with slot radiator and larger fan, a canvas canopy erected over the crew's compartment as a protection against the sun and various other devices in the form of asbestos lagging, etc, to ensure increased comfort for the crew.

IN last month's instalment the vehicle captioned as a Carden-Loyd Mk IV tankette was, in fact, a Mk I". The 'IV' derived from a typographical error. Though not so credited, all pictures in Part 1 were courtesy Imperial War Museum.



# Tank wagon from 'spares'

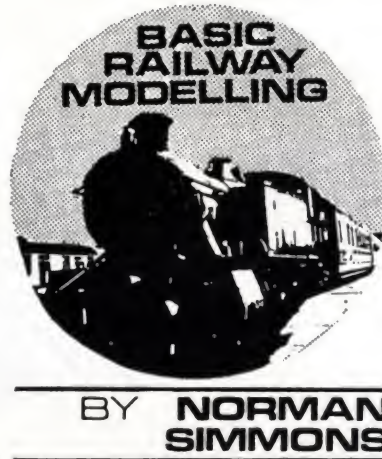
LAST month I described a wagon conversion using body parts from two Airfix 16 ton mineral wagons and chassis parts from an Airfix Esso tank wagon to make one model BR 24½ ton mineral wagon. At first thought this may sound rather extravagant . . . three Airfix kits to make one wagon? However, a glance at the left-over parts will show that all is not lost. To begin with there are two complete sets of mineral wagon chassis parts and I showed in the May 1966 issue how these could be used in conjunction with 40 thou plastic card to make a standard RCH 10/12 ton 7-plank private owner coal wagon. Then there will be body parts from the Esso tank wagon. I did suggest they could be used for a lineside storage tank, perhaps as the basis of an oil depot or maybe an oil-fired central heating storage tank for a factory. There are a number of possibilities for using these parts and this set me thinking. Why not try and combine the tank wagon body parts with the mineral wagon chassis and make an older type pre-BR tank wagon?

This was done quite quickly without using drawings or dimensions from any particular wagon so the model is not based on a specific original. However, by checking a Peco Wonderful Wagon tank wagon and a pre-war Hornby Dublo tank wagon I satisfied myself that the Airfix tank body would not look unreasonable if it was cut down in length. The scale 9 ft wheelbase of the 16 ton mineral wagon would need to be lengthened to at least 10 ft. These then appeared to be the basic problems; shorten the length of the tank, increase the wheelbase of the mineral wagon chassis and marry the parts together.

The tank was tackled as shown in Fig 1. The two shaded portions D and E were removed from each half of the tank body leaving a centre piece A 42 mm long with the manhole filler at the centre and two end pieces B and C, each 9 mm long. This makes a total length of 60 mm—a scale 15 ft—to which must be added the thickness



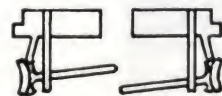
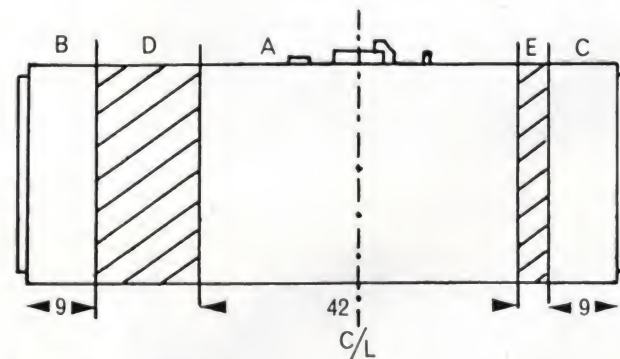
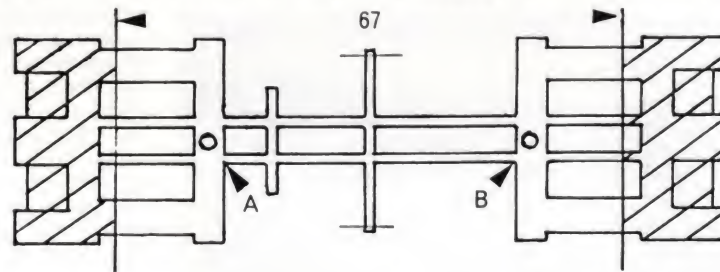
Made entirely from spare kit components left over from other Airfix wagon conversions, this very attractive tank wagon makes a simple and characteristic addition to the rolling stock of any 00 gauge layout.



of the end caps. The ends are in fact rather too highly domed and they need to be flattened by filing as far as possible. The thickness of the end cap walls will limit the amount of filing

that can be done but when they reach paper thin thickness they will be about the right shape. The three sections of each half of the body, A, B and C plus the two end caps can now be cemented together. Don't worry too much about the joins between B and A and A and C as these will eventually be covered by strapping. The assembled tank body should be left overnight before the joins are cleaned up with file and sandpaper and this gives an opportunity to turn to the chassis.

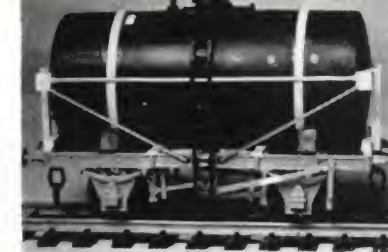
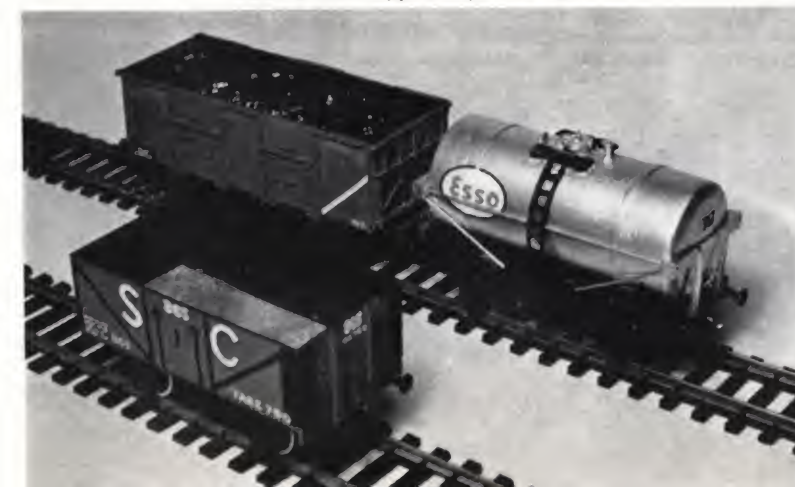
The Airfix tank wagon underframe forms the basis of the chassis. The two end platforms should be cut off leaving a centre section 67 mm long—see Fig 2. The pins in the centre of the two cross-beams, A and B on Fig 2, should be removed. Also, to allow clearance for the wheels, cut away the vertical members on the underside of these cross-beams. Lastly trim off approximately 1 mm from the tip of



both ends of the centre cross-beam. Now take a pair of Airfix mineral wagon solebars. Cut off the door stops (good use can be made of these parts in the 24½ ton mineral wagon or in any other wagon where extra door stops are required) and make an accurate vertical cut through the centre of each solebar to divide it into two equal halves. The two halves should then be cemented either side of a spacer cut from a 4 mm strip of 40 thou plastic card. If the same 4 mm strip of plastic card is used for both solebars they should both have the same scale 10 ft wheelbase. To strengthen the join in the solebars a strip of 40 thou plastic card 25 mm × 3 mm should be cemented behind. The solebars should be left overnight to enable the cement to dry out thoroughly and during the early stages they should be examined frequently to ensure that they are drying flat and level.

From observation it appears that spoked wheels are more usual for this type of wagon and I decided to fit a pair of Nucro metal wheels. Metal wheels are an easily added luxury which can bring a touch of refinement to all Airfix wagons. I fitted them in Peco brass bearings and the backs of the axleboxes were drilled with a No 41 drill to take them. This size drill make a nice force fit for the bearings which disappeared into the axleboxes with only the top edges showing. The centre hole in the mineral wagon buffer beam was enlarged vertically to take the shank of the three-link couplings which I use. They were assembled on the buffer beam at this stage. The thin projections at the tips of the buffer beams were removed. Incidentally, these can be used on the 24½ ton wagon. The chassis was then

Trio of wagons all made from the Esso or mineral wagon kits. The 24½ ton mineral wagon was described last month and the private owner wagon was featured in the May 1966 issue. Esso wagon illustrated is in silver finish with black chassis, typical of recent years.



Two views of the model before painting show very clearly the origin of the components; black parts are from the modern Esso wagon in the Airfix range and grey parts are from the mineral wagon. Plastic card parts are white.

assembled by cementing one solebar to the edge of the underframe, inserting the wheels and then cementing the second solebar and both buffer beams.

The chassis was checked for levels on a sheet of glass and left overnight to thoroughly dry. The tank body was then cemented in place. 10 thou plastic card strapping was cemented round the joins in the tank body and to the saddle. I should also mention that the backs of the solebars, particularly around the axleguards, need a little adjustment with a craft knife to enable them to fit snugly against the edge of the underframe. This will become obvious during assembly.

The horizontal cross beams at each end of the tank were made from three strips of 40 thou plastic card, 31 mm × 3.5 mm, cemented together. A groove was cut in each end of the

tank body to take each beam and great care was taken to ensure that the beams were at equal height (14 mm) and parallel to the buffer beam. A smaller cross beam 24 mm × 2 mm × 2 mm was made up of strips of plastic card and cemented to the top of the buffer beam and vertical 'T' shaped stanchions 2 mm wide made of 20 thou plastic card strips were cemented 12 mm apart centre to centre.

It is necessary to adjust the brake rigging to fit the increased wheelbase but this was found to be a simple matter. The brake assemblies were cut in half (see Fig 3) and each half was cemented behind the solebar with the brake block as close to the wheel as possible. The brake levers were lengthened by inserting a 4 mm spacer similar to the method used for extending the solebar wheelbase.

The horizontal and diagonal bracing either side of the tank was made of two thicknesses of brass wire, the thicker for the horizontal and the thinner for the diagonal members. I fitted them to the cross beams by cutting grooves in the ends of the beams. The wires were sunk into the grooves which were afterwards covered over with plastic card. The lower ends of the diagonal wires were bent over and inserted into holes drilled in the solebars. The projecting end of the wires inside the solebars were bent over again and squeezed with the tip of a pair of pliers to make the whole assembly firm and rigid.

The catwalk platforms either side of the manhole were shortened to approximately 15 mm. Only two of the three pairs of grooves in the top of the tank designed to take the catwalk are therefore required and the redundant pair were filled in with plastic putty. Holes in the sides and bottom of the tank were likewise filled in. Finally the various fittings on the top of the tank and the two ladders were fitted. Holes were drilled in the sole bar to take the locating pins on the ladders. It will be found that the ladders largely obscure the plastic card spacers inserted in the solebars to extend the wheelbase.

This just about completes the model. It is of no particular prototype so I cannot offer any ideas about livery. Invariably they are so dirty that an overall coat of matt black would not look out of place. Alternatively the tank could be painted silver and the solebars red as some I have seen.

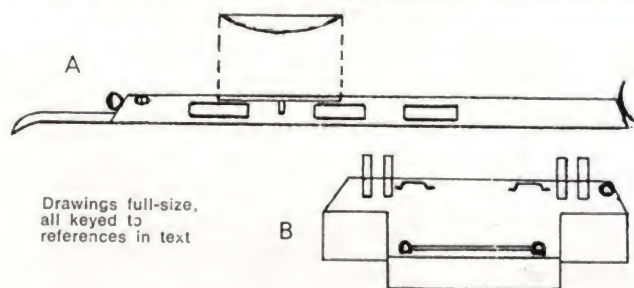


# The complete Josef Stalin

CHARLES KLIMENT DETAILS  
THE AIRFIX JS3 KIT

SINCE there are some inaccuracies in the Airfix JS3, especially the turret, I rebuilt it completely and as the conversion is relatively easy I am sure that other readers will wish to follow suit.

The hull is built according to instructions. Only some super-detailing is necessary. First, from paper or plastic card cut six 8×3 mm rectangles with rounded corners and place them on the sides of the vehicle as shown on the drawing A (full-size). These are the access



Drawings full-size, all keyed to references in text

doors to the tool and spares compartments, which run all the length of the hull over the tracks (incidentally, this is one big compartment without any dividing wall. That must mean that a screwdriver or a spanner put in the front-doors ended after two-minutes cross-country drive in the back!)

Over the two leading doors a deflector plate is situated, which stops any unwanted objects like AP shells going between the hull and turret bottom, as the turret at this point has a small overhang. From photograph 4 you can see it has three bracing supports, but I have used only one on my model, as with three it would have looked too crowded in the small scale.

On the back-plate must go the supports for the unditching beam, made from plastic card strips 1×8 mm, bent round a 5 mm diameter rod like a file or brush handle. Their position is clearly seen from drawings A and B and from photograph 1. In between the lower hinges on the hull back there is a heavy torsion-bar, made from stretched spruce of 0.4-0.6 mm thickness. This enables the door to be closed and even so it takes the best efforts of two men to close it. There are three handles, and their position and shape is clearly seen from photo 3 (centre). I made only the upper two on my model, though. On the right side of the hull, seen from the back, is a small red tail light, the size and position of which is again clearly seen from photograph

**Below, left to right:** Useful detail views for modellers show nose with track shoe lugs on glacis and Notex light on hull just below turret number; hull rear with torsion-bar hand grips; rear of turret with hand rails. Note the very crude finish characteristic of Russian tanks.

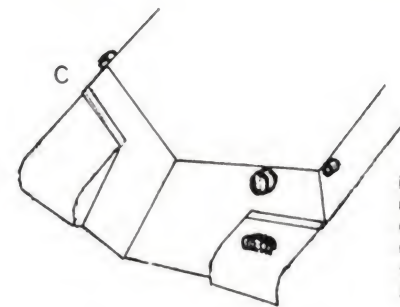


**Above:** Two views of the completed model show the radical change in turret shape needed for a true scale JS3 model. This depicts a Czechoslovakian Army vehicle.

1 and drawing B. Mudguards are of 7×9 mm plastic card rectangles. On the front there are two lights (red!), a headlight and two small night-driving lamps on the left mudguard. The Notex light, which can be seen in photograph 3 is peculiar to Czech JS3s and is not used on Soviet army tanks. Spare track-links could be positioned on the front of the hull (see the holders for them on the photograph) and hinges of the mudguard tops can be added from strips of paper or plastic card (drawing C).

The main problem with this model is the turret, though. I modified the original Airfix turret and I feel this is preferable to making a new one from balsa. First, you must file it all round to conical shape. From the photographs it can be seen the sides of the turret are almost flat. It is necessary to file down as far as the thickness of the material will permit, only be careful not to go through. This finished, it is necessary to build up the front end. I used the front part of the T-34/85 turret, filed carefully to fit the JS3 turret and sanded to smooth the joins. The back part of the turret was lengthened by using a plastic card strip, glued to the turret, with joins sanded down and the bottom cut only after the strip is in position. I did this by trial-and-error, referring to the photographs. See drawing D.

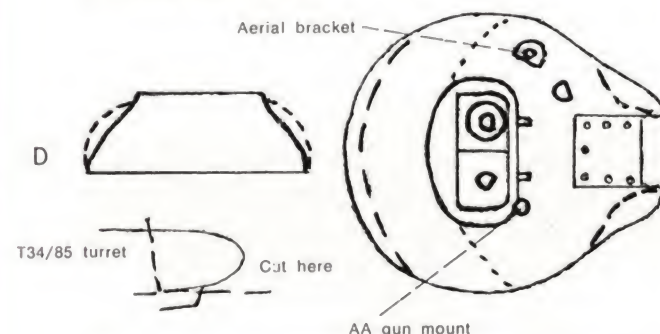
For the new hatches the old top must be filed flat. Carefully remove the centre pivot, as this must be cemented to the new top exactly on the same position. The top deck was made from 1 mm thick plastic card, the template being given in drawing D. The gap between this plate and the turret must be filled with body putty, and the exact shape is best seen in photograph 3. Now the double hatch can be made from paper or thin plastic card, with the small cupola, two



**Right:** Close view of a Czech Army JS3 in khaki field colour, showing clearly the details and turret shape changes for incorporation in the model.



Long dashes indicate original turret shape; dotted line indicates plastic card extension



## News from Airfix—from page 526

drawings plus numbered assembly and painting instructions in English, French and German. It is priced at 13s 9d. A 1½ volt U11 battery is also required, and must be purchased separately.

**A**IRFIX have made another collector's classic, a construction kit of the BMW R69 motor cycle.

The Airfix 76 piece kit makes a magnificently detailed, eight inches long model. It includes the 590 cc. 35 bhp horizontally opposed twin-cylinder engine, distinctive inclined air filter, BMW drive shaft and the welded double tube frame, rear lights and speedometer—it even has separate exhaust nuts to connect pipes to cylinder ports.

The BMW R69 kit is a Series 4 release and costs 8s 3d.



August, 1969



periscopes, hinges and torsion-bars again, if wished. Fit the gun after removing the extension on the upper part of the mantlet, and fit a new cover plate on the turret top (the original plate was filed down when shaping the turret, remember?) from paper or thin plastic card. Heavy bolts on this plate, made from stretched-spruce cut in 0.1 mm slices will greatly enhance the look of the finished model. Over this plate where it joins the mantlet goes another plate, 1 mm thick, with rounded edges.

Now add the aerial base with the aerial proper, the third periscope, the AA machine-gun and the hand-rails on the back of the turret. Their shape and position is clearly seen on the photograph 4. I made mine from stretched spruce, but naturally they can be made as easily from wire.

When painting the model, you have a choice of two basic colours. The field colour, used on exercises, etc, is a very light khaki shade, very similar to Humbrol Khaki Drill from the Military Uniforms set. In parade trim a much darker, greener shade is used. I painted my model in Humbrol matt dark green (number 30), which is nearly perfect. For something out of the ordinary, you can use white for Winter camouflage. But be sure to use very thinned down matt white over green. Let it run freely and do not try to get a uniform white colour, as in the field normal white-wash was used, sometimes combined with mud in brown patches over white. The only other markings, for a Czech JS3 at least, are plain white call-sign numbers as shown in the pictures. There are no stars or other emblems on Czech JS3s.

## New Books—from page 527

### Modern tanks

**TANKS OF THE GREAT ARMIES**, by Enrico Po. Published by Interconair SA, Genoa, Italy. UK distributors: Bellona Publications Ltd, Hawthorn Hill, Bracknell, Berks. Price 28s, plus postage: 1s 9d.

**A**LAVISHLY produced survey of the world's major battle tanks currently in service, this large format paperback volume has 64 pages and includes fully detailed coverage of the Chieftain, T-54/55, T-62, M60, M60A1E1, M60A1, Leopard, and AMX 30. It is multi-lingual in that the text is in English and Italian, there are eight pages of big colour pictures very nicely reproduced, masses of big half-tone pictures, detail shots, an excellent scale drawing of each vehicle, very complete specifications, and cut-away diagrams. In short this is a most absorbing book packed with lots of useful information and facts of value to military modellers and enthusiasts. Since relatively little is ever published on current tanks, this book fills the gap very well. Our one reservation is the appalling translation of the Italian text into English—very much 'as she is spoke'—which though it does not detract from the actual contents, becomes rather irritating after a couple of pages. Otherwise this is a very worthwhile publication. Jones Bros. of Chiswick also hold stocks of this book and supplied our review copy.

### Books to come

**N**EXT book for modellers from Patrick Stephens Limited, publishers of *How to Go Plastic Modelling*, is another in the 'How to Go' series entitled *Collecting Model Soldiers* by the well-known collector Major Henry Harris. This is a definitive work comprising 200 pages and nearly 80 photographs and drawings. Prices at 35s this important book, published on August 12, will be reviewed next month.

For military uniform enthusiasts, Volume 2 in the highly successful *World Uniforms in Colour* series is to be published on September 2, price 30s.





# The British Army '14-18

UNIFORMS AND REGIMENTS  
DESCRIBED  
BY DAVID NASH

## Part 2: Infantry 1916-18

UNLIKE the Germans, the British Army continued to use the same pattern of uniform throughout the war. That is not to say, however, that there were no changes, but that all the alterations that were made, were 'functional' in its broadest meaning. The two most important changes were in the modification of equipment and in the introduction of cloth formation insignia.

The most obvious identifying feature of the 1918 British soldier was his steel helmet. The now familiar design was devised by a certain Mr Brodie in 1915. It commended itself for several reasons; it gave a fairly good measure of protection to the wearer, it was cheap, and it was very easy to produce. The helmet was made of manganese steel alloy, had a simple padded lining, and was kept on the head by a leather chin strap. In the



**Above:** Left and right views of British infantrymen in regulation uniform and equipment, of 1916. The 'canteen' is seen suspended from the haversack, the entrenching tool blade (in its canvas cover) hangs from the belt in the small of the back, the water bottle hangs on the right hip and the bayonet scabbard and entrenching tool handle on the left hip. This was 'fighting order'.

front line it was usual for the helmet to be covered by a sandbag, cut and sewn to shape. Later specially made helmet covers in the same material were issued. Often these covers would be painted or dyed brown or green or a mixture of both; failing this camouflage treatment, the cover remained just plain light tawny brown sacking. The helmet was first issued to a few units late in 1915 and was universally in use on the Western Front by the time of the Battle of the Somme in July, 1916. It proved so successful that the US Army adopted it in 1917, using it until 1942, whilst it continued in service with the British Army, with only minor alterations, until replaced by the 1944 model. It is still to be found today in use with the armies of many countries of the world.

Body armour was used to an extent

**Below:** In the mud of the Western Front dress was frequently 'non-standard'. These three sergeants of the Northumberland Fusiliers are wearing the old pre-1908 leather equipment of South African War vintage. Remainder of their uniform is worn casually, and the man on the left wears an officers' style raincoat. Note the waterproof trench waders worn instead of boots and puttees (Imperial War Museum).

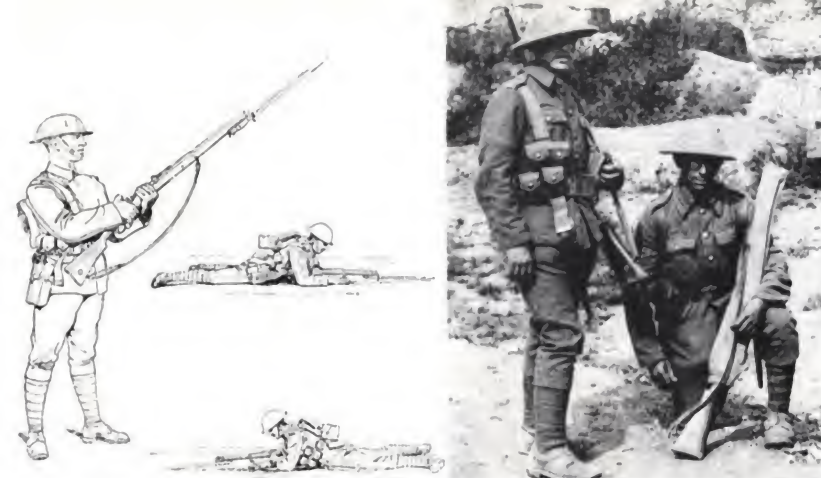


but was never particularly common. Government issue armour was worn over the tunic and was disliked because of its great weight. More popular were several commercial types which were light and flexible, being made of silk and padding or of metal strips and scales. These were all worn under the tunic and had the same ballistic properties as the helmet.

The use of gas at Ypres in 1915, gave birth to a whole range of gas-masks. Firstly there was a gauze pad soaked in chemicals, held over the mouth and nostrils by tapes, together with separate goggles. This was followed by a rather macabre cowl with circular eye pieces, the whole tucking into the neck of the tunic. Finally came the box respirator, carried on the chest. When in use, the mask was taken from its canvas case and fitted on to the face; from the mask ran a flexible air pipe to a chemical bed in the base of the respirator case.

No basic changes occurred in the web equipment of the ordinary soldier. There were, however, several items of additional equipment, such as the gas mask case and stout small packs to carry grenades. The 1914-18 soldier was also subject to an increasing load occasioned by the change in warfare. Such items as barbed wire stakes as well as the wire itself, waterproof capes and ground-sheets, increased ammunition, Very pistols, grenades, Lewis guns, together with their drums of ammunition, and so on, are evidence of this fact.

The cloth formation patches, uni-



**Above, left:** 1916-18 fighting order with anti-gas respirator carried on the chest. **Above, right:** A private and corporal, both in helmet covers. Man on left wears 1908 pattern equipment while the kneeling corporal wears the old leather equipment. Note the rifle cover, another common item of equipment. **Inset:** Figure in prone position showing how the equipment appeared from this aspect (Imperial War Museum).

versally in use in 1918, are a study in themselves. Sometimes they took a form not unlike those in use today, but, more frequently, they were a plain cloth patch, or a series of patches, on the shoulder, or on the back just below the collar, and on the helmet cover. There seem to have been no regulations covering the use, shape or size of these badges, and different formations used the patches in widely varying ways. Some brigades, for instance, would adopt a symbol—perhaps a scarlet triangle or a disc. The different battalions of the brigade would then have coloured bars below below this. The system was carried, in a few instances, to platoon level.

Some instances of these cloth patches are as follows:

Battalion	Patches
8th Royal Irish Rifles	Light blue triangles, point downwards, on each shoulder
2nd Royal Inniskillen Fusiliers	Red triangles on each shoulder, with four red bars below this, on each arm
9th Dublin Fusiliers	A large green square on the back of tunic, below the collar
19th Manchesters	Yellow and green triangles backed to each other to make a diamond, worn on the back, just below the collar



**Above:** Front and rear views of Airfix models converted to 1916-18 style. These are standard 1914 figures with their heads changed for those from Airfix 8th Army troops. A knife and good contact adhesive is all that is needed for these conversions. Extra details of equipment, such as entrenching tools, etc., are added from plastic card and scrap following the detail drawings with this article. Note that one man carries his helmet on his pack.

tions in dress. Shaggy goatskin coats, leather jerkins, balaclava helmets, woollen gloves and mittens, waders and gum boots were all used to combat the weather. There was no issue of the goatskin coats after the winter of 1914-15 and the possession of one of these coats was the mark of the old soldier at the end of the war; so much so was this, that, in 1918, many young officers did their utmost to try to obtain one of these rare items, for with them went respect—wherever they should go.

The British Army engaged in the Middle East against the Turks and in Africa against the Germans, wore a tropical uniform, patterned on the style of the home service uniform, but made from a light khaki drill material. In place of trousers, shorts were often worn; the cap was replaced by a sun helmet. The steel helmet was not worn in these theatres of war, but the equipment was as has been previously described.

The Infantry were armed with a variety of weapons. The rifle was the SMLE Mark III, which was introduced into the army in 1908. Its range was some 3,700 yards, and an effective marksman, such as the bulk of the original BEF, could fire some fifteen aimed rounds per minute. A well-defined target could easily be engaged at 2,000 yards with this weapon, this being far in excess of the performances obtained by any of the Continental armies. The machine gun was the .303 Vickers which will be described in a later part. Introduced in 1916, the Lewis gun became the infantry battalion's basic automatic weapon. It fired a drum of 47 rounds and was a very effective weapon up to ranges of 1,200 yards. The officers carried a .455 Webley revolver which fired six shots before being reloaded; swords were carried in 1914, but were soon dispensed with because they were ineffective and made the officer an unmistakable target to the enemy marksman.





# Fulmar from a Battle kit

CHALLENGING CONVERSION BY BRYAN PHILPOTT

COLLECTORS of naval aircraft are generally well catered for by the kit manufacturers, especially if they have a leaning towards American machines in this category. There is however, one important omission from the ranks of British naval aircraft which should be included in any display following this theme. This is the Fairey Fulmar which has the distinction of being the first eight gun fighter designed specifically for use by the navy.

The Fulmar was designed to specification 08/38 and was based on an earlier specification, P4/34, which called for a high-performance two-seat, light bomber. The later Admiralty specification called for a fighter with eight 0.303 inch wing mounted machine guns and accommodation for an observer and the necessary equipment which at that time was considered essential for work with the fleet.

The prototype first flew on January 4, 1940, and the aircraft entered service with 806 Sqn, FAA, in July of the same year. Although reasonably successful in the Mediterranean theatre against Italian aircraft of comparable performance, it was no match for the Luftwaffe and was gradually phased into the night fighting and training roles.

A total of 250 Mk Is were produced followed by 350 Mk IIs which had a more powerful engine and were tropicalised. The Airfix Fairey Battle provides the basis for a conversion that will enable naval enthusiasts to add this interesting fighter to their collections. This is not one of the easiest conversions, but once the main problem of changing the fuselage outline has been overcome, everything is reasonably straightforward. The aircraft chosen by me was the prototype Mk I (N1854), but alterations to the radiator—as shown in the Mk II photographs—could be carried out by those wishing to model the later aircraft.

## The fuselage

The first step is to cement two pieces of thick plastic card (40 thou) inside the rear of the Battle fuselage halves. The reason for this is, that the Fulmar had a much narrower cross-section, and when the Battle's fuselage is reshaped, the original fuselage sides almost disappear. Cement the two halves together, and after they have thoroughly set, cut off the tail and nose sections where shown on the drawing.

It may be argued that a complete new balsa fuselage, as in an Avro York conversion, should be made, but this could present difficulties with wing location, etc, and by using the Battle fuselage this is easily overcome. Fit balsa blocks to the nose and tail then shape these to the profile shown. As the width of the tail section aft of the cockpit is reached, penetration of the Battle fuselage is likely to occur, hence the need for the plastic card mentioned earlier. Remove the shaded area around the cockpits and once again rebuild the new outline with balsa. At this point you should decide whether or not to mould new canopies or use the Battle's suitably modified.

If the former is the case, fit a block big enough to allow the cockpits to be carved and then cut-out for moulding. However, with the exception of the windscreen, the rest of the Battle's canopies can be used although they need re-working. The observer's compartment is a question of trial and error, but it is essential to remove the two

triangular protrusions on the Battle canopy before gradually altering the bottom line to fit the new area. The rear of this canopy can be merged into the fuselage line with body putty or a small balsa block.

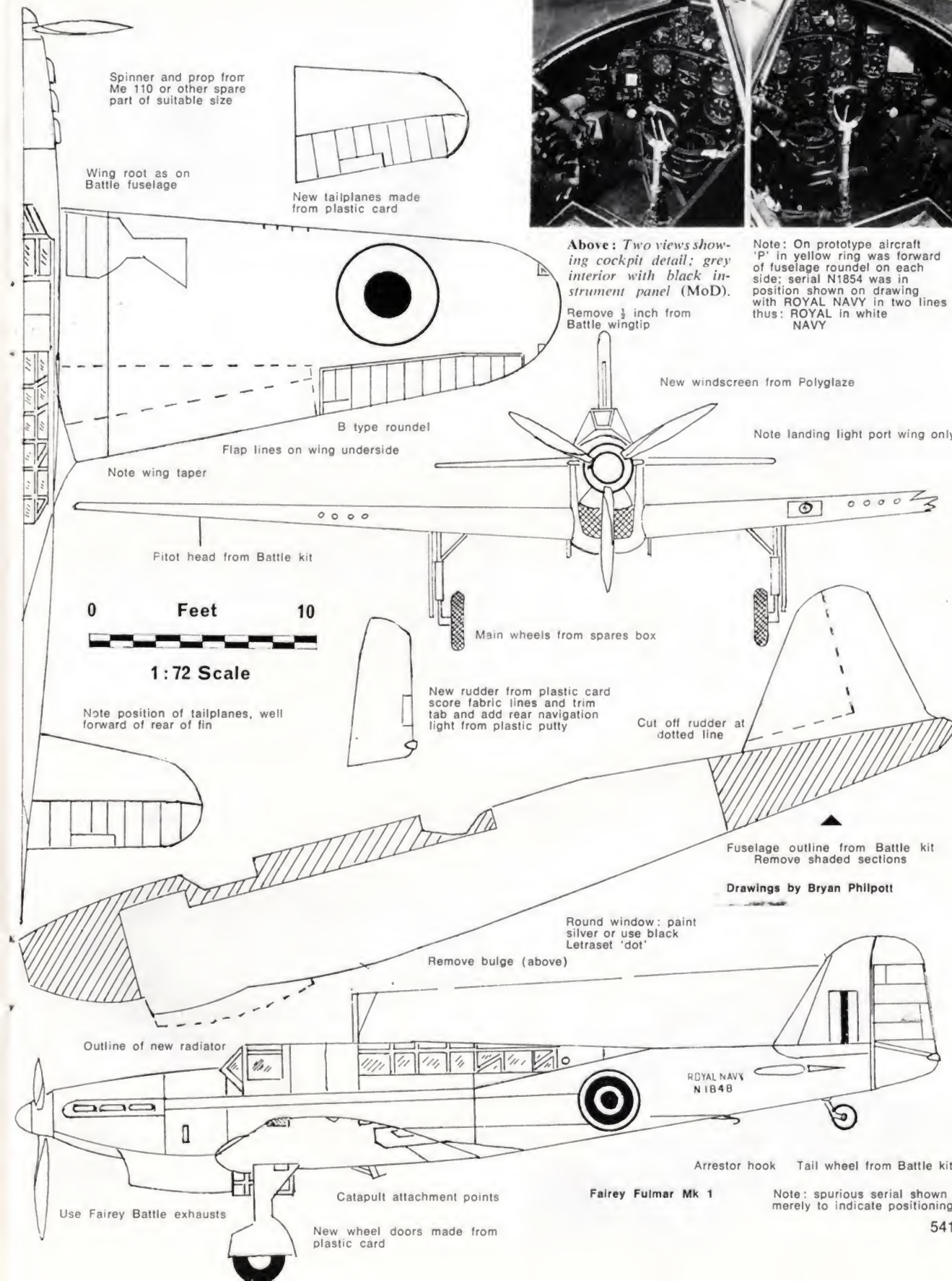
## Canopy and Aircrew

The Fulmar had a narrower pilot's canopy than the Battle with a vertical windscreen line. This can be made by reversing the canopy and cutting off the sloping portion until it is parallel with the new front. The windscreen must be made from polyglaze or acetate sheet then framed with thin strips of painted Sellotape. Use the scale drawing as a pattern. Remove the bulge from under the Battle centre-section and add the two catapult attachment points. These can be made by reshaping the Battle's wheel spats (parts 38 and 48). The arrester hook is fabricated from sprue and scrap and the original exhausts slotted into the new nose.

The aircrew presents a slight problem as the Battle's is far too large and in any case has no spinner. I eventually used one left from an Airfix Me 110 conversion with the spinner reshaped, but a Hurricane's or any other similar aircrew would do just as well. The final addition is the radiator which is very much longer than the Battle's. This is shown dotted on the drawing and can be carved from balsa, although as an experiment, I used Plasticine which was shaped on the aircraft, then covered at 24 hour intervals with layers of body putty. When this was thoroughly dry it was sanded to shape.

Continued on page 544

**Head of page:** An early production Fulmar I in 1940 colour scheme of Sky undersides and dark slate grey/extra dark sea grey upper surfaces. Serial N1858 is black and there is no 'Royal Navy' lettering. Spinner and rudder are possibly yellow (Westland photo via R. C. Jones). **Below:** Two views of the preserved Fulmar II kept at RNAS Lossiemouth. This machine is dark sea grey on upper surfaces with Sky undersides. Serial is N1854. Type C1 roundels are carried on the fuselage and upper wings with Type C below wings. RNAS Lossiemouth crest is painted on nose. This finish is, needless to say, somewhat non-authentic. N1854 was the original prototype (MoD photo courtesy RNAS Lossiemouth).





# Dakota with a needle nose

Simple but colourful conversion by Alan W. Hall

THE need to provide in-flight training for aircrews in NATO countries using the Lockheed F-104 Starfighter brought about a modification to the ubiquitous Dakota which provides the subject for my conversion this month. As the time-honoured aircraft was in almost every air force using the F-104 it was natural that a conversion should have been contemplated. My subject is based on the Belgian version seen at Coxyde some two years ago but readers will also find examples in either Italian or Dutch air force colours.

The conversion itself was a relatively simple affair as it only involved the use of a spare nose section from an Airfix F-104. I did, however, take the opportunity to correct the dihedral angle on the wings of the Dakota kit as this is far too shallow when compared with the full scale aircraft.

Finishing of the Belgian air force aircraft was, on the other hand, rather difficult as it involved the complicated use of three colours in the fuselage stripe—a problem even to the most experienced model maker, and not one I would wish on a beginner. To say the least it tried my patience to the extreme but was well worth while when completed.

As the conversion is intended for beginners I have given greater detail in the instructions as I feel that much of the more complicated work I do sometimes misses out parts which, due to restrictions on space, have to be presumed by the more experienced.

**STAGE 1** Before sticking the fuselage halves together the fuselage window transparencies have to be cemented in place. To do this I used the end of an orange or cocktail stick and very gently applied the minimum amount of cement to the area around each window. It is essential that these transparencies are firmly glued in place as there is much work to do on them later and it would be a tragedy if one came loose during the work as it would be almost impossible to get it back again.

**Top of page:** A view of the completed conversion in its colourful Belgian Air Force finish. **Below:** Improving the dihedral as suggested in the article. One set of wing outer panels is seen cut off while the other is cemented in place at an increased angle.



**STAGE 2** I did not bother to include the interior detail provided with the kit as it does not show when the model is completed unless the individual wishes to have the rear door in the open position. The cockpit interior was, however, painted a light green before closing the fuselage halves. The wing outer sections can be made up complete with ailerons and so can the tailplane halves. All these parts should be allowed to dry thoroughly before further work can proceed. Taking the fuselage first a lot of work will be needed to rub down the joints lines and fill the unwanted stand gap under the rear of the underside. I used a knife blade to scrape off the worst part and then with coarse, turning to fine, wet and dry paper I rubbed down the joints until they had completely disappeared. The stand slot was filled with plastic wood. The wings and tailplane are similarly treated.

**STAGE 3** By reference to the plan and using a fine fret saw I then cut off the original nose. An F-104 fuselage had been made up meanwhile and the nose of this was then cut off just forward of the cockpit coaming. Before the two pieces can be joined together, a wooden insert  $\frac{1}{16}$  inch thick must be placed between them. This was made from balsa roughly cut to a circular shape and put in place with polystyrene cement. The assembly is allowed to dry and then carved to its final shape with a sharp knife as the end of grain runs across the direction of cut. A final polish with sandpaper is needed before filler is applied. This is made from a mixture of clear dope and talcum powder and applied liberally with a large brush. When dry

it is rubbed down with decreasing grades of sandpaper until smooth. I found that two coats of filler were needed before the required shape was satisfactorily smooth and the joint lines invisible.

**STAGE 4** Attention can now be turned to the wings which by now should have dried out satisfactorily. To alter the dihedral angle I cut the outer wing panels off completely, outboard of the engines and after having rubbed an increased angle with sandpaper laid flat on the bench, re-cemented them. Great care should be taken in the re-alignment because it would be something of a disaster to have different dihedral angles on each wing. To make sure that they went back in the right place I cut two pieces of scrap balsa to provide a prop under the wings and laid a weight on the centre section after they had been glued in place. By leaving this overnight I found that the joint had set and that the wings took on a more accurate dihedral. Any excess glue that might have squeezed out of the joint was removed by a fine file. If you do not wish to risk your luck with this operation, leave the wings as they are and move to the next stage.

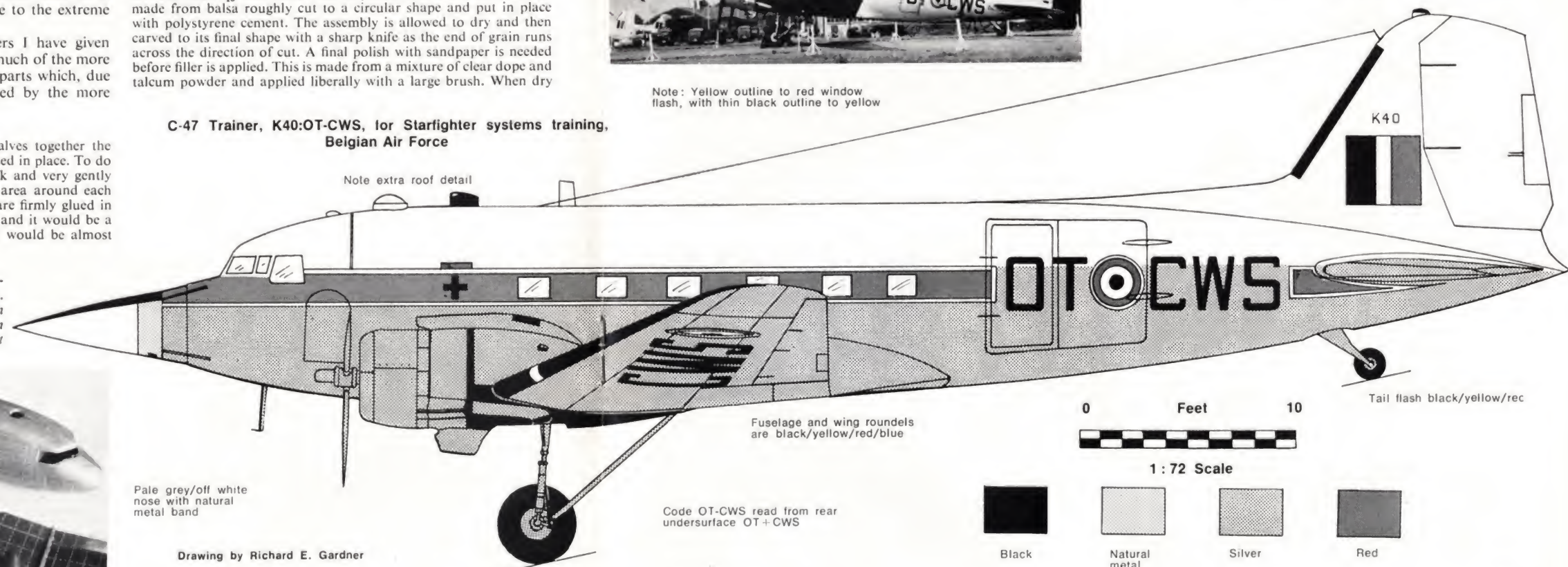
**STAGE 5** The wings, fuselage and tail unit can now be assembled. I added the tailwheel at this time and the cockpit transparency but not the astro-dome. The engines too can be added but care will have to be taken with these as the moulds of the Dakota are getting a little aged and there seems to be rather a lot of flash present on most kits being turned out at the present time. The undercarriage legs were left off until later as I did not worry about having a retracting undercarriage. Long air intakes on the top of the engines are used in preference to the shorter alternatives in the

Continued on next page



Note: Yellow outline to red window flash, with thin black outline to yellow

C-47 Trainer, K40:OT-CWS, for Starfighter systems training, Belgian Air Force



Drawing by Richard E. Gardner

AIRFIX magazine

August, 1969

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## Needle-nose Dakota—continued

kit. Much work with a file and sandpaper will be needed before the engine cowls will fit properly and it is worth spending a little time on this particular operation.

**STAGE 6** There remains little to do on the model before starting painting. The wing landing light transparencies are added and other minor additions include the manufacture of the various bumps and aerials on the fuselage roof. All of these were either carved from sprue or in the case of the blade aerial made from plastic card. The anti-collision beacon on top of the fin was also made from sprue and a flat area is filed on the fin to take it. The final job was to add the pitot head under the nose.

### Painting and finishing

The only way to paint this model well is to mask off the areas required in order to achieve straight clean lines. The black of the anti-dazzle panel on the nose, the de-icing areas on the wings, fin, tailplane and engine interiors were done first. With the black available the tyres and propellers were also painted at this time. These areas were then masked out with Sellotape and the white of the top fuselage decking put on. Here I used two coats. First I painted a matt white coat which was glossed over when dry. This in turn was masked and a yellow area around the windows put on. Silver came next again after the rest had been masked out. When all the tape was removed the main bulk of the painting had been completed and only the detail remained to be done.

This was possibly the most difficult part of the whole construction. To get the broad red stripe down the fuselage sides I used Yeoman transfer strip marked off with dividers and then cut out with a sharp knife. This was laid on in one complete length, pressed down with a dry cloth and after a few minutes to ensure it had set the windows were cut out removing at the same time the Sellotape masks already there to prevent the yellow coat going over them.

To get the very thin black line round the outside of the red and yellow stripe I used parts of Stoppel decal sheets. A useful bonus on these popular transfers

are the thin lines at top and bottom of the sheets which incorporate the manufacturers' trade mark. They are on transfer slide and will come off very effectively if damped in the normal way. To do the job satisfactorily I had to cut pieces about two inches or less in length as being so thin they tended to buckle before being laid down. This stage takes a long time and needs much patience. It is, however, the best way to tackle the difficult task of obtaining the necessary fuselage stripe of the Belgian Air Force and will turn out well if time and care are exercised.

Before sticking on the transfers the area of the new nose which roughly corresponds to that taken from the F-104 model is painted with a light gloss grey. I used Humbrol 40 Granite for this as it appears to be the nearest colour available. Roundels and fin flash came from the Stoppel sheets which fit the requirements exactly and are sufficiently flexible to go over the fuselage door ribs on the port side. Fuselage codes came from the new Letraset sheets No M16 (RAF Black letters). Similarly the serial 'K40' above the fin flash came from this sheet. Unfortunately two sheets were needed as not all the letters were available on one. After having been rubbed down these added much to the finish of the model. There are, of course, several other transfer sheets available with this style letter.

The black areas on the engine nacelles were added in gloss black with about one part to two of matt black to give the semi-matt finish needed. The astrodome was added, a thin red stripe was cut from transfer for the propeller line on top of the fuselage, and the props were stuck in place. Wheels were added and the one or two additional fuselage marks completed.

**Below:** Close-up of the nose showing the stages of applying the tricky cheat lines in the manner described in the text.



## Fairey Fulmar—from page 540

and the experiment proved successful.

The Battle's fin and rudder is the wrong shape for the Fulmar but the fin can be used if it is removed where shown. Add a new rudder from plastic card with the rib lines cut with a modelling knife. Two new tailplanes are required and again these are shown. The Battle's cannot be used as they are narrower in chord and a slightly different shape.

### The Wings

Next turn to the wings. First fit the bomb bay doors in the closed position then fill in the wheel wells and cut off the rear fairings. Cement the ailerons in place and when the whole assembly is dry cut  $\frac{1}{2}$  inch off each wing tip, including the ailerons, before reshaping to the new outline. The Battle's ailerons were inboard of the tip but the Fulmar's were not so pronounced and a small filling operation with body putty at the extreme tip will fill the hinge line where necessary. The thickness has to be gradually reduced and once again care is needed as the plastic becomes very thin especially towards the tip.

Sand the bomb bay doors and wheel wells smooth, then cut out the new undercarriage bays by using the template shown on the drawing. This is a tricky operation as the pieces removed are very small. Younger or less experienced modellers are advised to make the aircraft with its wheels 'retracted' or alternatively, indicate the wheel wells with De Frey black transfer sheet cut to shape from the drawing template.

The Fulmar had only one landing light on the port wing but the other supplied with the Battle can be used to fill the unwanted slot on the starboard wing, sanded and filled, then painted over. The undercarriage must be entirely scratch built with wire, stretched sprue, or Slater's plastic rod (as reviewed in the June 1969 issue). The door covers are cut from plastic card and the wheels came from the spares box except for the tail wheel which was the one supplied with the Battle. Fit the Battle pitot head under the starboard wing and the aerial post to the top of the fuselage. The latter is made from sprue or by cutting down the Battle's.

Finally, clean up the whole model by filling the balsa grain with talcum powder and clear dope or a thin layer of body putty. Give the whole model a coat of matt white or matt grey, which shows up

any blemishes needing further attention, then score the flap lines and drill the eight machine gun ports in the wings.

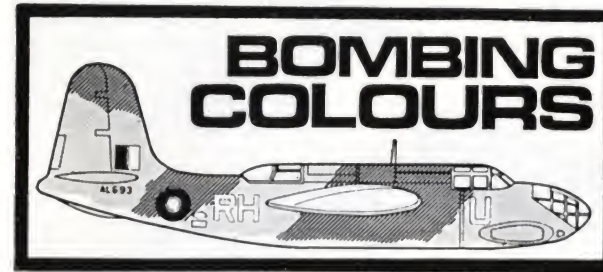
Standard Fleet Air Arm camouflage of the period is then applied. The prototype was finished in Sky type S underneath and a standard temperate scheme of dark slate grey and extra dark sea grey on the upper surfaces. The serial number and small ROYAL NAVY is added from any of transfer sheets now available. On the prototype the ROYAL NAVY was in two lines in white above the black serial, but on most service aircraft it followed the standard practice as shown on the drawing.

William Green's *Fighters* Volume 2 and John Taylor's *Combat Aircraft of the World* contain useful photographs of the Fulmar, and it is also mentioned in the Harleyford camouflage books.

(The writer would like to express his sincere thanks to the Commanding Officer RNAS Lossiemouth and Mr Bob Jones of IPMS for their help in research for this article).

**Right:** Radiator shape for anyone modelling a Fulmar II. Compare with drawing on page 541.

**Below:** The completed conversion, finished in this case as the Fulmar prototype described in the text.



## Part 5: Experimentation

AS related earlier in the series, a finish of PC10, a protective covering in pigmented cellulose that was used as final doping coat, was standard for all operational aircraft from mid-1916. Applied to upper and side surfaces it bestowed a shade, officially described as khaki and alluded to variously as shades that ranged from green to brown. By November, 16, a clear doped aircraft on the Western Front would have been sufficiently unusual to evoke a 'Make a note, Baring!' exclamation from Trenchard. And in fact, when on the 26th of that month Sopwith 1½ Strutter A1092 was delivered to France without its top plane having a PC10 coating, GHQ of RFC in the Field were sufficiently moved to complain. The Air Board replied in January, 1917, that it had been reiterated to manufacturers that all machines were to be finished in 'a khaki colour'.

The Royal Naval Air Service also used PC10 together with PC12 which gave a browner finish. Similar instructions applied to naval contractors. These finishes were used irrespective of an aircraft's role and thereby embraced bombers; they remained standard until mid-1918 when experiments conducted in the winter of 1917 reached fruition.

Experiments in camouflage finishes were being conducted in four main directions:

- (1) A new standard scheme to replace PC10/PC12 for all aircraft.
- (2) A special camouflage for night flying aircraft.
- (3) Special schemes to give minimum visibility to night-flying deep penetration aircraft viewed from below.
- (4) Special schemes for low-flying observation, corps reconnaissance and ground strafing aircraft to give concealment from above.

The first three schemes, concerning bombers are detailed below.

### The new standard

PC10 was basically a protective covering by the inclusion of pigments in the cellulose used to dope the fabric of aircraft. Hitherto, a pigmented dope had been advocated only as a final finishing doping cover on top and side surfaces, with a protective transparent varnish in some cases. New schemes were devised in early 1918 to include pigments on all dope coatings and thereby improve the weathering properties, dispense with a final varnish and to be an overall finish.

The Royal Aircraft Establishment experimented with pigments in their Raftite dope and in October, 1918, had two Handley Page 0/400 bombers, B8810 and B8811, finished in the new scheme and sent to No 5 Group, Dunkirk, for evaluation. To find how the dope weathered in sea air the Establishment asked the Isle of Grain experimental station to conduct experiments with a quantity of the new Raftite which they supplied.

At Grain, Armstrong Whitworth FK8s were allotted for the task; B4198 and F618 were each given new upper planes.

August, 1969



Marking up roundels the hard way—and general way—in the First World War. During 1918 experiments were conducted in producing printed fabrics of identification markings to stick on fuselage sides. A specification was approved by September that year, but the cessation of hostilities halted the production of these fabrics (Imperial War Museum).

fitted on October 5 and 18, 1918, respectively, doped on both sides with the new mixture. The war was over by the time the weathering tests were over and the dope proven.

Meanwhile, industry had also been experimenting with similar schemes and in September, 1918, PC10 and PC12 were officially superseded by an edict from the Ministry of Munitions advising manufacturers to adopt the new Armoid Scheme A, known as AMA, for all operational aircraft. The scheme was simple—three coats of pigmented dope which bestowed a finish similar to PC10.

The issue of the new dope was followed by a refinement into two types as follows:

AMAPD Khaki (Home and Western Front use)

AMAPDT Reddish brown (Tropical use)

(PD stood for protective dope and 'T' for Tropical, the colours are the official descriptions.)

Thus from the end of 1918 camouflage colours were of two distinct standard shades, and in many cases were applied overall not merely to upper and side surfaces as before. Stocks of the new dope lasted until 1923.

### Nivo for night

The new night scheme was primarily a bomber scheme but extended to night fighters whose activity had resulted solely from the night bombing campaign. To commanders in the field, black had seemed the logical colour for aircraft operating at night and extra quantities of lampblack mixed in dope had bestowed a sooty appearance to many FE 2bs at the Front. But the scientific staffs of the Ministry of Munitions, the 'boffins' of this earlier World War, were not convinced that black was the best colour for concealment at night. On a very dark night this may well be so, but such conditions occasioned by a heavy overcast were unsuitable for air operations. Pilots and observers relied on stars for

Continued on next page



## Bombing Colours—continued

navigation and moonlight for locating targets. Moonlight was reflected from land and sea, and in the half light, black would make an aircraft appear as a harsher silhouette than some other shades.

The problem of recommending the ideal was given to the Experimental Station, Orfordness, busily engaged on conducting armament experiments over ground currently being built upon and where, in recent months, many relics of those days have been unearthed by an RAF bomb disposal team. For their camouflage experiments of late 1917 the type of aircraft used is not known, but is presumed to be BE 2cs, of which the station had several. One painted black and another in standard PC10 were the control batch for comparison with a third machine painted in various shades.

A pale blue finish proved something of a turning point. The aircraft in this finish appeared, according to the official report, to first come into visibility as a 'whitish ghost', whereas PC10, the khaki, had always appeared as a black silhouette. If these two shades represented the extremes of black and white, then somewhere between them, it was argued, would lie the shade that equalled 'night' and in theory render the aircraft invisible. But night itself, by virtue of the moon periods and the vagaries of the weather, was anything but standard. However, it was a pointer and a shade was devised, somewhere between the two, to give the best concealment in average night conditions.

The new shade was a mixture of yellow ochre, ultramarine blue and lithophane and the experimental staff claimed that as a night camouflage it would be difficult to improve upon. It was given the name Nivo and in effect gave fabric a greenish sheen. The Experimental Staff recommended it for all upper and sides surfaces and in January, 1918, a DH 4 was finished in Nivo and sent to Farnborough for examination.

It took some six months to put Nivo dope into production and then only in small quantities to conduct service tests. Aircraft in the workshops at Hounslow and North Weald were given the new dope and their weathering was examined; finally, it was applied to 500 wing sets for Avro 504s under production. The finish was deemed proven in June, 1918. From mid-1918 it was firmly established that all night flying machines should in future be in Nivo and day flying in



**Above:** An experimental mottled finish on a Handley Page O/100 bomber. A report by the Orfordness Station stated, 'Provided that a few shades of say blue, green and brown, can be found, which would have the same power of reflecting moonlight as NIVO, there does seem some possibility in a mottled camouflage which would be as good as NIVO for night work and might prove useful for day work too.' As it was, the Handley Pages proved too vulnerable for day work (via E. F. Cheesman).

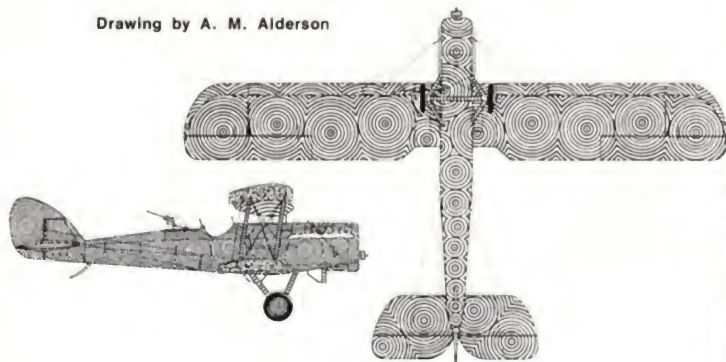
khaki. Nivo became the styling for RAF night bombers until 1937.

But experiments were by no means at an end in 1918. The shade was decided but not the surface finish. The sheen of the glazed finish of Nivo was questioned and Orfordness started all over again to adjudge matt and glazed finishes; and the former was finally recommended.

**Below:** The Germans used printed fabrics of hexagons in six shades for their bombers as this captured AEG GIV shows. Fabric from captured examples was carefully examined by Ministry of Munitions experts and reports were promulgated, but German methods did not influence British methods (Imperial War Museum).



Drawing by A. M. Alderson



**Above:** A glimpse of the exotic: dazzle day scheme for DH 9As evolved by C. F. Snowden Gamble, but too late in the war to be adopted.

## Day bomber schemes

Hitherto, the standard PC10 scheme had bestowed a camouflage colour for concealment from above. There was a need in 1917, with the expansion of bombing forces, for the high flying day bomber to have a camouflage rendering it difficult to observe from below. A special scheme had been tried with DH 4s, detailed in Part 3 of this series. Other schemes concerned a mottled finish and garish schemes designed to mislead gunners sighting on to the aircraft. Examples of these schemes are illustrated but none was adopted.

## National markings

Roundels were unaffected by the new AMA standard dopings, except that when it was applied overall, the lower as well as the upper wing roundels, now had a one inch white surround.

In the new standard night scheme and experimental day schemes, roundels were radically affected. It was advocated that roundels be removed from upper wing surfaces and in late 1917 the Orfordness Station recommended the white



**Above:** As early as June, 1918, the American aircraft assembly organisation adopted NIVO as their standard for the finish of O/400s. Here one is being erected at Ford Junction, October 24, 1918, for training American crews.

inner be darkened. At this time, as will be evident from Part 1 of this series, an indication of nationality was an expedient, not as it became later, firstly through the medium of the League of Nations, and latterly through UNO, a matter of International Law.

Early in 1918, two BE 2cs had been sent to France for comparative tests; one had standard roundels and the other had one wing roundel placed further inboard than the other and the white replaced by cream. Nothing resulted until eleven days before the Armistice when, on November 1, 1918, an order was promulgated throughout the RAF to the effect that on all night-flying aircraft, the red centre of roundels would be increased to meet the blue outer and so eliminate the white.

The order did not reach many service units until after the Armistice. Some commanders, regarding it as a purely war-time measure, did not implement the change. However, it was later enforced on production for bombers and the red and blue roundel on a Nivo finish became the standard for night bombers lasting for almost the next twenty years.

Bruce Robertson

## CORRECTION

IN last month's issue on page 488 the words 'last month' instead of 'this month' appeared in reference to the 'Battle' class destroyer. We hope this editorial 'gremlin' did not cause too much searching of June issues for a drawing that wasn't there! The drawing on page 485, July issue, was the one in question.

August, 1969

## Commemorating the 50th Anniversary of the first non-stop crossing by air of the Atlantic Ocean by Alcock and Brown

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by P. St John Turner

JUST PUBLISHED



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Pictures on this page show various aspects of DR 1 187/17 as drawn opposite. Picture above shows the machine with normal length carburettor breather pipes, while picture at foot of page shows it with long carburettor pipes and a ring sight. Machine is presumed from Jasta 27 (A. W. Haynes photos).

# A guide to the Fokker DR1

## SECOND INSTALMENT OF PAUL LEAMAN'S DETAILED TREATMENT

LAST month we studied constructional details of Fokker Triplanes and the manner in which they were finished when they left the factory to equip operational Jastas. Without known exception all operational Triplanes served on the Western Front, it being general practice on both sides that this theatre should be first equipped with what was considered latest and best.

When taken on strength of a Jasta they were usually (but not always) marked distinctively by, firstly, Jasta and, secondly, pilot to aid recognition during combat. Usually, but not always, because of the military situation pressure was frequently such that priority was given to having aircraft available for operations rather than have them correctly marked.

It must be realised that in general Jasta markings are relative to a specific time, and even place, and were often changed as one commander was replaced by another. The dress uniforms of the regiments of commanding officers and even individual pilots frequently played a significant part in choosing Jasta and aircraft markings.

Now we will consider the three pre-production machines F1/101, 102, and 103/17 and see how they were probably marked and then proceed to markings applied to several other aircraft between the time they were taken on strength and the changeover from curved to straight sided cross (Eisernes Kreuz and Balken Kreuz). This change, which resulted from an order dated March 20 1918, was not fully effective for some time and indeed cross proportions were not finalised until August 1918, by which time DR 1s could hardly be described as other than obsolescent. Undoubtedly many DR1s carried their original cross version all of their service lives.

### F/1 102/17 and 103/17

These were placed with JG1 for combat evaluation purposes and are normally associated with Von Richthofen and Voss. Von Richthofen did indeed fly 102/17 for a period but whilst he was on leave it was shot down with Lt K. Wolff of Jasta II in its cockpit. This was on September 15 1917, and Wolff was killed. It is with justice that Werner Voss and 103/17 are linked for it was in this aircraft that he was killed by Lt Rhys-Davids of 56 Sqn RFC on September 23 1917 during an Epic combat with most of that squadrons highly proficient pilots, an episode which is described in full detail elsewhere. As a sideline it should be noted that Voss in fact only scored his last ten (out of his final 49) whilst flying a Triplane and that he had it from August 29 to his death on September 23, 1917. Although these three were clearly painted as F1 the type had been officially designated as DR1 some time previously. The obvious structural difference between these F1 aircraft and later production machines was that F1s had no wing tip skid, whereas all DR1s were so equipped. It has been suggested that these three had a

different cowling with a narrow undersection to it but there is no conclusive evidence of this.

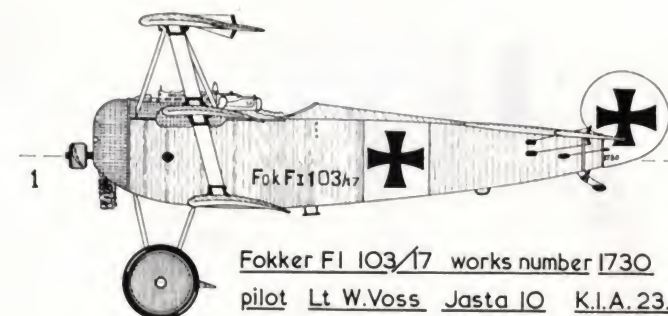
The main field of difference seems to lay in the technique of application of camouflage and markings of all three F1s compared to production machines. Of this the only positive facts that are irrefutable are that the fuselage cross was positioned further forward than was normal for the production types, being centred about the fabric join, and, though clearly marked with their military serials on fuselage sides and works numbers on their rudders, they carried none of the multitude of stencilling of their later sisters. Examination of photographs will also reveal a major difference in the style of application of the camouflage.

No evidence supports the legend that 102/17 was 'all red' and 103/17 'silver blue'. It is the opinion of the writer that all three machines including 101/17 were finished as follows. The entire aircraft excepting metal panels was painted under surface blue after initial dopping. Upper surfaces only were then painted in the thin olive brown wash that was used on production machines. All cross fields were painted on in white and stencilled crosses, etc, were then

applied. Evidence in support of this theory includes the fact that these three machines had no narrow under surface blue border to fuselage and tailplane. The blue used on the under surfaces was quite strong and glossy and would show through the thin green to give a predominantly blue effect. All photos of the machines show that the upper surface paint was applied as previously described, ie, streaked. At one stage it is probable that all three aircraft had natural aluminium cowlings and panels as some photos show this on 101 and 102. Photos also show 102 with a dark painted cowling, probably the olive brown described previously. No 101/17 which was statically tested to destruction at Aldershof on August 11, 1917 almost certainly finished its life with natural metal cowling and panels. 103/17, the subject of drawing number 1 had a further amendment in the fact that Voss's mechanic painted its cowling front in white. All struts, ties, and wheel discs of these machines were left in undersurface blue.

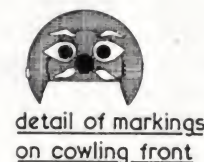
No 144/17, subject of drawing 2 was an aircraft of Jasta 11 which whilst piloted by Lt E. Von Stapenhorst (four confirmed victories) was brought down by ground fire, with a bullet in its engine, on January 13, 1918. Von Stapenhorst became a prisoner of war and his

Continued on page 550

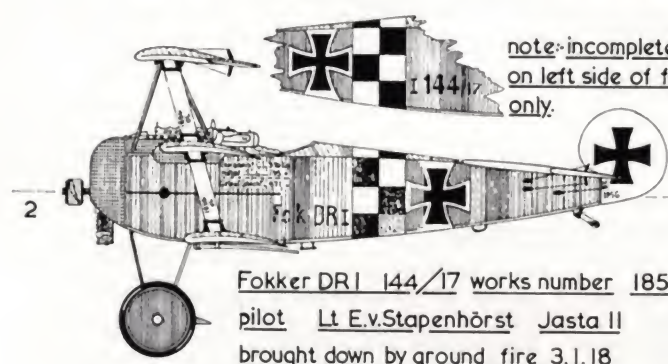


Fokker F1 103/17 works number 1730

pilot Lt W.Voss Jasta 10 K.I.A. 23.9.17 in this aircraft.



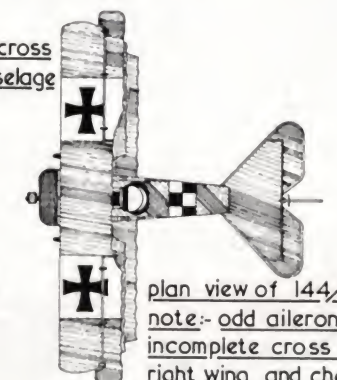
detail of markings on cowling front



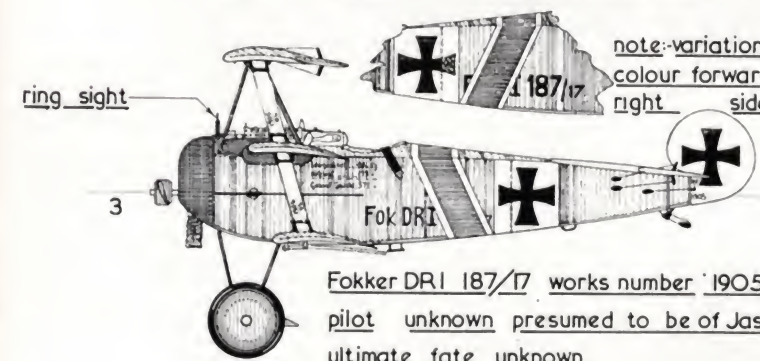
Fokker DR1 144/17 works number 1856

pilot Lt E.v.Stapenhorst Jasta 11 brought down by ground fire 3.1.18

note:-incomplete cross on left side of fuselage only.



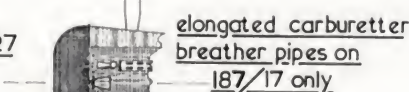
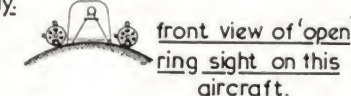
note:- add ailerons, incomplete cross on right wing and check marking on decking



Fokker DR1 187/17 works number 1905

pilot unknown presumed to be of Jasta 27 ultimate fate unknown

note:-variation of cross colour forward of fabric seam right side only.

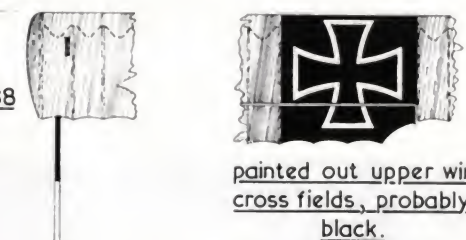


pipes 'flattened' at extremities

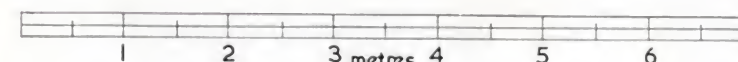


Fokker DR1 404/17 works number 1988

pilot Hpt Ritter A.v.Tutschek Jasta 12 K.I.A. 15.3.18 in this aircraft.



Jasta commanders black & white streamers both mid wing tips.



August, 1969





Above: The brothers Richtofen pose in front of a Jasta 1 Triplane (Imperial War Museum).

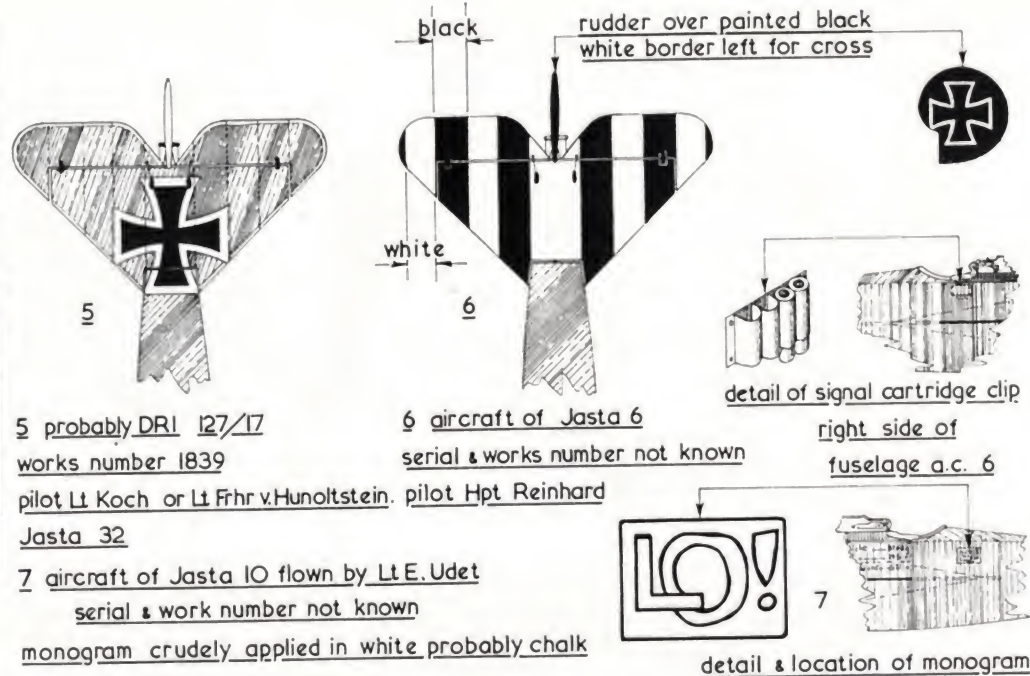
aircraft which was virtually intact was evaluated by the British Ministry of Munitions and became the subject of Report No IC620. A second report with many valuable sketches of structural detail appeared in *Flight*, May 14, 1918, and it is to this report that we owe most of our knowledge of Fokker Triplanes. As the aircraft was copiously photographed in France, in the UK and also in the Enemy Aircraft View Rooms where it was exhibited with its fabric partially stripped it would seem at first thought an unnecessary exercise to provide a further drawing of it. However so many incorrect drawings of this aircraft have appeared since 1918 that our drawing is offered in an attempt to rationalise the existing knowledge of it.

No 144/17, a standard production machine was flight tested at Schwern on October 31, 1917 and delivered to Jasta 11 on December 12 1917. Its basic camouflage scheme was as described previously and when it left the factory it carried all relevant stencils and markings. By the date of its capture it was somewhat the worse for wear. At some stage a damaged right aileron had been replaced with a spare of an earlier pattern obviously in haste as the rear arm of the cross was not painted on. The markings on the fuselage had become decidedly rough and the lower part of the fuselage checks had flaked away in both white and black areas the 'FOK' lettering had all but disappeared from the left side of the fuselage leaving only DR1 clearly visible. The serial on this side had not been repainted after application of the chequer band. The fabric join which was the subject of earlier comment as cutting across the forward arm of the fuselage cross produced an even more curious result on this machine. From Imperial War Museum Photo Q56020 it can clearly be seen that whilst the white outline exists forward of this join there is no 'central black'. To the rear of the join this 'central black' is evident outside as well as inside the cross! This is illustrated in our drawing.

The chequer marking referred to appeared above the fuselage but apparently not below. It has been suggested on many occasions that this aircraft had either a red cowling or an all red fuselage. It is

possible that as an aircraft of Jasta 11 this was so but there is no evidence to support the theory. The Imperial War Museum has fabric samples from this aircraft and whilst there was a sample of red fabric on an adjacent page it does in truth refer to another aircraft. However legends, once established, die hard.

Drawing 3 shows DR1 187/17. It is thought that this machine served with Jasta 27, but examination of its markings do not support this. Jasta 27 DR1s of this period were normally painted with yellow cowlings, struts and tail units. The name of the pilot of this machine remains a mystery but obviously from the modifications, condition, and embellishments to it he was a man who merited care and attention from his ground crew. It could well be that the cowling of 187/17 was painted yellow and as it had been photographed with the orthographic film of the period this would photograph 'black', as would red. From this we can conclude that the fuselage inner stripe could have been any one of these three colours. Evidence against the cowling having been painted includes the fact that the nameplate is clearly visible but, regrettably, illegible. When photographed the aircraft was in excellent condition with the full range of stencilled serials and other details clearly visible. The fuselage cross on the right hand side of this machine shows a change of colour forward of the fabric seam which was commented on in other aircraft. Of particular interest are the wheels, which show signs of excessive cleaning in that the area around the hubs had most of its original paintwork rubbed away. The 'ring sight' mounted at the rear of 187's cowling was unquestionably from a captured British machine and is a support strut assembly with clamp ring from an Aldis tubular sight as fitted to SE 5 and 5A aircraft. As with so much else related to aircraft of this vintage the reasoning behind the extended carburettor breather tubes may only be guessed at. Obviously this extension would bring the open ends into the turbulent air wash from the propeller and could possibly increase air intake and thus power. These tubes were apparently flattened at their ends as drawn presumably to aid streamlining. Amongst



5 probably DR1 127/17  
works number 1839

pilot Lt Koch or Lt Fhr v.Hunoltstein.  
Jasta 32

7 aircraft of Jasta 10 flown by Lt E.Udet  
serial & work number not known

monogram crudely applied in white probably chalk

6 aircraft of Jasta 6  
serial & works number not known

right side of  
fuselage a.c. 6

detail & location of monogram



Model of DR1 144/17 as featured in the text and drawings. Based on the large scale Revell kit, with added detail and improvements, this superbly finished model by Colin C. Huston won the 'large scale' model class of the 1968 IPMS Championships. Note the excellent representation of the 'streaky' finish (Photo by C. C. Huston).

stencilling which is clearly visible on this machine is that of an apparent date shown as detail 11 on last month's drawings. On 187/17 this read as 12.12.19 which would tally with the aircraft's test and delivery dates, ie, 8.12.17 and 27.12.17, except that the final figure is as stated 19 and not 17 as could be expected. Again no explanation can be offered and we can only guess at its implications, probably an error of application.

Drawing 4 shows DR1 404/17 which was flown by Hauptman Adolf Von Tutschek, leader of Jasta 12 and in which he was flying when killed on March 15 1918. The black rear fuselage and tail shown in this drawing were typical of the manner in which Jasta 12's aircraft were marked during the period that they flew Triplanes. All of Jasta 12's aircraft had white painted cowlings during this period. 404/17 had, originally its wing, rudder and fuselage crosses on normal white fields, the fuselage rear and tailplane only being in black. During its service these were amended and the aircraft appeared as depicted. As Staffell Fuhrer, Von Tutschek carried one metre length black and white streamers fastened to the trailing edges of his lower wings. When the machine was parked these were kept off the ground by being wound around the adjacent ties. A further detail to be noted is the patch of worn paint this time quite small on the wheel hubs. Apart from the variations noted 404/17 was finished in the standard manner and carried all of the stencilling depicted last month. Where the fuselage was not painted black it did have the normal narrow edge of undersurface blue. This is a point worth noting as the absence of this edging on any triplane, other than 101, 102, and 103/17 is a fair indication that the machine's factory finish had been over painted, probably in Jasta colours.

Drawing 5 shows the marking on the elevator of an aircraft of Jasta 32. This has been quoted as being 127/17 and its pilot to be either Lt Kock or Lt Fhr Von Hunoltstein. However 127/17 was known to have been flown by Manfred Von Richthoven on several occasions though this fact does not preclude the possibility that it may later have found its way to Jasta 32. A point to be noted is that the cross is identical in size to that normally displayed above the wings. In all other respects this aircraft was finished in the standard manner.

Drawing 6 shows an aircraft of Jasta 6 which was the mount of Hauptman Reinhard, its commander. It was finally destroyed in a crash which left Reinhard uninjured. Reinhard, who succeeded Manfred Von Richthoven as leader of Jagdgeschwader 1 was noted for his coolness and whilst he apparently lacked the panache often associated with fighter pilots he was quite 'unflappable', a quality which probably stood him in good stead. The colour of the striping on this aircraft has been given elsewhere as red and white. That is quite wrong and Jasta 6 carried its black and white stripes as shown through to the Fokker EV/DVIII with which it was eventually equipped, the black painted rudder having been replaced by a standard white one by that stage. Reinhard carried a clip of signal cartridges fastened to the right hand side of his aircraft's fuselage just below its cockpit rim. As far as can be seen this aircraft, for which no serial or works number are available, was otherwise finished in standard factory finish.

Drawing 7 shows a marking applied to the DR1 which Lt Ernst Udet flew when appointed to Jasta 10, it being a monogram based on his fiancée's name, Lola, and one which he carried in some form on all his aircraft. From available photographs it was, in this case, crudely applied as a line drawing and was probably done hastily in chalk, a practice used by both sides on occasion. No other details of this aircraft are available but it was apparently finished in the standard manner with all relevant stencils clearly marked.

August, 1969

# German tank crew uniform

SECOND OF THREE ARTICLES  
BY MARTIN & DICK WINDROW

## Part 2 : Waffen-SS Panzer Crews

THE *Waffen-SS*, and in particular the *Waffen-SS* Panzer Divisions, have only recently been accorded the close study which their fighting record deserves. Leaving on one side the political aspects of this remarkable force, and also their grim record of war crimes, one is forced to admit that they were one of the most militarily effective bodies of troops to emerge from any war in history. Constantly shifted from front to front as a military 'fire-brigade', they maintained their determination and esprit de corps even in the final weeks of total collapse; and judged purely as fighting troops they were the equal of any Allied or Axis unit then under arms, and superior to most.



Above: (A) Untersturmführer of Waffen-SS Panzer troops in black tank uniform with grey and black uniform cap. Shaded piping indicates 'panzer pink'; silver piping round collar, collar patches, cuff title, crown and band of cap. All insignia silver on black. See text for details. (B) Scharführer of Waffen-SS Panzer troops in collarless camouflage smock over general service tunic. Smock grey and dark green; tunic collar black, silver edging; black side-cap; cap and collar insignia, silver on black; pink chevron on front of cap; green on black rank patch on smock upper arm. See text.

### The Divisions

1st SS Pz Div, 'Leibstandarte SS Adolf Hitler' saw action in Poland and France in regimental strength, and as a Division in the invasion of Russia. Officially a Panzer Grenadier Division until 1944, it had a much higher tank and assault gun content than comparable Army Divisions; this was a feature common to all the 'first team' SS units. The LSSAH played a prominent part in all the major campaigns in Russia, in Normandy, and in the Ardennes.

2nd SS Pz Div, 'Das Reich' was in combat in brigade strength in France in 1940, and later fought in Russia, Normandy, and the Ardennes.

Continued on next page



## Panzer uniforms—continued

3rd SS Pz Div, 'Totenkopf' fought in France in 1940, and from 1941 onwards fought on the Russian front, retreating finally into Poland, Hungary and Austria. When it surrendered to the US Army in Austria in May 1945, *Totenkopf* had been reduced to six tanks and less than 1,000 men.

5th SS Pz Div, 'Wiking' was formed early in 1941 from Dutch and Scandinavian volunteers with a German cadre drawn from the *Das Reich* Division. It fought on the Eastern Front throughout the war, earning the highest reputation of any of the foreign volunteer SS formations.

9th SS Pz Div, 'Hohenstaufen' was trained in France during 1943 and first saw action in the East in April 1944. It was moved back to France to fight on the invasion front in June 1944, and fought back through France and the Netherlands during the summer. It fought at Arnhem in September, in the Ardennes at the turn of the year, and in Hungary in the spring of 1945.

10th SS Pz Div, 'Frunderberg' was raised at the same time as the 9th Division, fought in the northern Ukraine between April and June 1944, and was then transferred back to the invasion front. Like the 9th Div, it played a major part in the fighting round Arnhem, and in the last six months of the war fought on both Western and Eastern Fronts.

12th SS Pz Div, 'Hitlerjugend' was raised with *Frunderberg* and *Hohenstaufen*, and contained a high percentage of 17-year-old Hitler Youth members with a hard core of veterans from the 1st SS Pz Div. It was decimated in the desperate fighting in Normandy in June 1944, and in the Falaise pocket. It fought in the Ardennes and in Hungary in the last months of the war, and surrendered, with one tank and 455 men, to the US Army in Austria on May 8, 1945.

The *Waffen-SS* Panzer units wore the black uniform of the Army Panzer troops with certain differences of insignia. Fig A illustrates an *Untersturmführer* (2nd Lt) in typical dress. The black jacket is piped round the collar not in pink, but in silver braid, indicating commissioned rank; non-commissioned ranks wore no piping at all. The collar patches of the Panzer troops are replaced by SS patches. On the right collar is the SS *rune* insignia, on the left a rank patch; both patches are edged with silver braid to show commissioned rank. Again, non-commissioned ranks wore patches with no edging. A selection of the rank distinctions is shown in Fig D. The officers and men of the 3rd SS Pz Div *Totenkopf* wore on the right lapel a collar patch on which the SS *runes* were replaced by a death's-head. This was of the same design as the SS cap badge, differing from the Army Panzer death's-head insignia in several details. All insignia were silver on black.

*Waffen-SS* troops wore no eagle badge on the right breast; instead, an eagle of distinctive design was worn on the left upper arm. Round the left forearm, roughly mid-way between the elbow and wrist, was worn a narrow black band edged with silver, on which the name of the Division was embroidered in silver. Shoulder straps were identical to Army straps of similar rank, but had an extra underlay of black under the *waffenfarbe*; this need not concern modellers in OO/HO scale. The pink Panzer *waffenfarbe* was used on SS shoulder straps in exactly the same way as on Army uniforms. Photographs show many SS Panzer officers wearing their ordinary uniform peaked cap with the black tank uniform, as in Fig A; the body of the cap was field grey, with silver crown piping, silver cords, and silver piping round the top and bottom of the black band. Silver-grey metal or silver thread badges were worn on the cap: an SS-pattern eagle on the crown, and an SS-style death's-head on the band.

The black side cap and field cap were also worn by SS personnel, in the same way as Army Panzer troops, with the same rank distinctions. The SS-pattern eagle replaced the Army eagle as the upper badge, and the death's-head replaced the national cockade. The inverted chevron of pink *waffenfarbe* was worn on the side cap exactly as on Army caps. Occasionally the eagle badge would be placed on the left side of the cap instead of the front.

A camouflage smock in the distinctive SS 'seaweed' pattern of grey and green was often worn by tank crews over the black Panzer uniform and sometimes over the field-grey service tunic. There were several patterns of smock including a collar-less round-necked variety, and the tunic collar was often worn open and outside the



Above: (C) Private of *Waffen-SS* Panzer troops in one-piece grey and dark green camouflage overall. Silver-grey badges and pink chevron on black side-cap. (D) *Waffen-SS* insignia. Top left: SS-pattern eagle and death's-head. Lower left: Rank patches for camouflage or protective clothing: left to right, top to bottom: *Oberführer* (Brig), *Obersturmbannführer* (Lt Col), *Unterscharführer* (Senior Corporal), *Untersturmführer* (2nd Lt). All green on black. Top right, collar patches: left to right, top row: SS-run; *Rottenführer* (L/Cpl); *Scharführer* (Sgt); *Oberscharführer* (Colour sergeant or CSM). Bottom row: Divisional collar patch of 3rd SS Pz Div 'Totenkopf', officer's pattern; *Untersturmführer* (2nd Lt); *Hauptsturmführer* (Capt); *Obersturmbannführer* (Lt Col). All silver on black. Bottom right, *Waffen-SS* cuff titles, silver on black: (top) 2nd SS Pz Div 'Das Reich' (bottom) 1st SS Pz Div 'Leibstandarte SS Adolf Hitler'. The 'handwriting' style was also used on the cuff title of the 12th SS Pz Div 'Hitlerjugend'.

smock. Fig B illustrates a *Scharführer* (Sergeant) with his collar outside the smock; in this case he is wearing his field grey general service tunic, with a black collar edged in silver braid to indicate senior non-commissioned rank. The side cap is black, with the badges described above. On the upper arm of the smock is a rank patch in green cloth on a black background; a selection of these rank patches is illustrated in Fig D.

A camouflage coverall was also worn by SS tank and SP gun crews, and this is illustrated in Fig C. Regulations forbade the wearing of any insignia on camouflage clothing other than the stylised patches shown, but the rule was widely ignored; photographs show SS troops with collar patches, arm eagles, and even divisional cuff-titles sewn on to their camouflage suits.

### Figure conversions

The surrendering figure from the German World War I infantry set is again the most useful figure for conversion into an SS tank commander. The steps outlined in Part 1 of this series should be followed up to the painting stage. It is not difficult to suggest the loose bulk of a camouflage smock by judicious smears and spots of Plasticine, and by trimming the cuffs to simulate the tight draw-string of the smock. The smock was usually fully skirted, and you can therefore avoid the difficult and tedious job of trimming the original figure's tunic to 'Panzer' length. By settling for a camouflage smock you also avoid the need to add lower lapels to the tunic from tissue paper; you can paint the figure as in Fig B, with the collar of the general service tunic showing over the smock. An NCO is easiest; the silver-edged officer's collar patches will tax all but the most experienced modellers. Personally, we have not found a figure which provides an easy and convincing modification for the full-length camouflage suit; but we have high hopes that the Airfix RAF crash crew kit may have something to offer in this line.

For a 'cupola' model of an SS officer wearing black uniform and peaked cap, we suggest the officer figure from the Airfix Fieseler Storch kit. He is a shade large, but careful trimming round the edges of the hat and the shoulders will bring the scale appearance down a bit. The hat presents no painting problems, and the large collar gives a good painting surface for the tricky collar patch detail. Again, lower lapels can be added from tissue paper.

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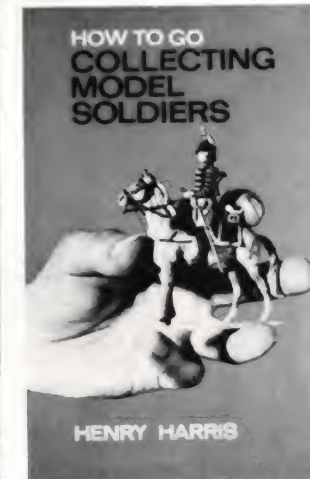
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# NEW KITS AND MODELS

## 1:48 SCALE SHERMAN

**S**PLENDID new release by Aurora in their 1:48 scale tank range is described somewhat vaguely on the box as a 'Sherman Tank' but is, in fact, a first-class replica of the M4A3 (76 mm) HVSS perfectly detailed in every way and as near to 100% accurate as any kit that has ever come our way. It is certainly by far the most perfect kit of a Sherman tank on the market and highly commended for any military modeller. Assembly sequence and method is similar to the Airfix Sherman kit and the kit can be completed comfortably in an evening. The only possible improve-



ments we can suggest are drilling out the muzzle brake and replacing the thick plastic aerial with finer stretched sprue.

Included with the kit are a tank commander and three infantry figures. The kit instruction sheet is not up to the standard of the kit itself and the transfer sheet is satisfactory but not specially imaginative. The horizontal volute bogies are specially simple to assemble and are very free running—the tracks will move if carefully joined at the ends—but there is no 'working' springing. Not to be missed by enthusiasts for larger scale models, this Sherman is a worthy addition to the other good models in the same range. Our sample came from Jones Bros of Chiswick who hold stocks. Price is 15s plus postage if ordered by mail.

Incidentally, Jones Bros tell us that the Imai Chieftain reviewed last month has now had its price increased to 25s. C.O.E.

## NEW FROM JAPAN

**T**WO new kits from Japan of appeal to military enthusiasts are a LVT(A) 5 (which is externally identical to the LVT(A) 4) by Nitto, and a Panther Ausf D by Tamiya, both to 1:35 scale.

Each is motorised in the traditional Japanese way, the Nitto kit being free-running with a single motor and on/off/reverse switch, while the Tamiya Panther has a motor for each track and a remote control box just like the larger 1:25 scale Panther which Tamiya released a couple of years ago. Both kits are up to the high

standard set by previous models from these two firms. The LVT(A) 5 comes with three alternative sets of transfers of which the Korean set provided is the only one really applicable to the LVT(A) 5. If you use the two World War 2 sets you should, strictly speaking, call the model a LVT(A) 4!

The Panther is virtually a scaled down version of the Tamiya 1:25 scale Panther except that the working torsion bar suspension used in the larger scale is omitted. As a result the suspension is more realistically 'compressed' on this model than on the larger one, though the track lacks 'sag' at least when the model is new. It may stretch with time. The instruction sheet is admirable in every way with extensive painting details, numerous pictures (including detail views) of actual Panthers, and very clear diagrams. Other features of the kit include a good set of crew figures, excellent transfers (with options for a post-war French Panther), and, of course, the rough 'steel' textured parts pioneered by Tamiya.

Our samples came from Jones Bros of Chiswick and the LVT(A) 5 costs 35s 11d and the Panther 59s 11d, postage extra in each case. C.O.E.

## BIG CAR KITS

**W**E have been able to inspect, though not make, two expensive new car kits from the Japanese firm of Bandai. Curiously enough, though both are models of similar types of car they are to different scales. First of the pair is a Lotus Europa to 1:20 scale which is motorised with the usual Mabuchi engine located at the rear with an on/off/reverse switch and a dummy engine partly concealing the real motor. Front wheels are steerable and there is suspension on all four wheels. Doors, bonnet, and trunk lid all open and the manufacturers look to have done a very neat job of concealing the hinges in each case. Finish of the parts is excellent and there is a wealth of detail with all the bright parts suitably chromed and the 'leather' and interior trim parts in black plastic. This kit costs 39s 11d.

Second kit is an Alfa Romeo 1600 Scarabeo to 1:16 scale, rather more complicated to make than the Lotus. It has a complete and highly detailed dummy rear engine concealing the Mabuchi motor supplied, working headlights, opening rear engine cover, full spring suspension with real springs, opening bonnet (concealing the batteries), and an opening 'canopy' style cockpit. Detailing is lavish and the kit is really in the luxury class with a 44-stage illustrated instruction sheet and about 100 parts. Chrome, metallic, and 'leather'

parts are moulded in the appropriate finish. Price is 79s 6d.

Without making up these kits we are unable to comment on the constructional side, but previous experience with Bandai models suggests that there should be no hidden snags for anyone who follows the instruction sheets with care. Our samples were loaned by Jones Bros of Chiswick who hold stocks. C.O.E.

## NEW FROM ALMARKS

**R**ECENT Almarks transfer releases have been fast and furious and we have had a very large batch for review, sheets being issued of interest to both aircraft and military modellers.

Taking them in order of release, we have A10 which features 30 Type A RAF roundels, a second printing of a sheet we reviewed earlier on. These are for the 1937-42 period after the introduction of camouflage when the blue was slightly darker than pre-war days. Diameters vary from  $\frac{1}{8}$  inch to 1 inch on this sheet and the red centres are separate parts which are applied after the main transfer to ensure perfect register. Without the red centre, these markings could also be used as wartime RAAF roundels. Sheet A9 is a companion set featuring A1 roundels, ie, those with yellow outers, but the style is otherwise similar to sheet A10 with separate red centres. These sets cost 3s each.

Sheet A14 is a delightful and useful set for anyone modelling Me 109s. It features beautifully printed emblems for 109Es, 'Fs, and 'Gs of JG 54 and JG 52 all coded to a positioning diagram for the various aircraft on the instruction sheet provided. The second half of the same sheet gives Croatian Air Force markings for Me 109s, while the big attraction (in our view) is the mass of German stencil and maintenance instructions for Me 109s all perfectly reproduced in minute 1:72 scale lettering and applicable to any machine. The instruction sheet gives translations of them all with a very precise positioning diagram which should enable any modeller to faithfully mark his Me 109 down to literally the last full stop! A second sheet, A15, also deals with Me 109s, with emblems for JG 3, and others for JG 77 and JG 1, aircraft, all superbly printed. The second half of the sheet is made up of markings for Hungarian Air Force Me 109s, and finally, there is a big selection of 'kill markings' for Me 109 tails. A positioning diagram is given with the instruction sheet. Both of these sheets, which cost 4s each, give markings of aircraft illustrated in

Continued on page 556

AIRFIX magazine

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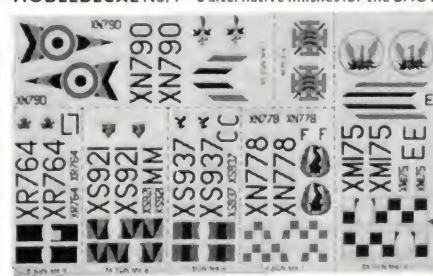


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## New Kits—continued

colour in the various Aircom books which are commended for further reference.

Set A18 offers good value in containing two sheets of RAF squadron code letters plus a generous panel of solid colour, all in 'Sky'. In this set, one sheet contains scale 24 inch letters and one sheet contains scale 36 inch letters. In most cases the letters are duplicated several times. Price of this sheet is 3s 6d. Finally sheet A19 consists of British aircraft serials in black and white, plus 'Royal Navy' lettering, also in black and white. Two sizes, scale 4 inch and 8 inch deep, are included with a very generous supply of each. Price of this sheet is 3s 6d.

Lastly comes sheet T16 for military modellers. To 1:76 scale it has squadron markings for AFVs, white WD numbers, RAC Recce Regt, RASC, HQ, and Lorried Infantry colour patches, plus the necessary unit serial numbers which can be superimposed over the patches. Again, another top value sheet at 4s, it will be indispensable for tank and truck models.

We also have advance news from Almarks that they are to produce a set of transfers—first of a 'special' series—of markings for the RN Phantom which won the *Daily Mail* transatlantic race. On the sheet also will be markings for the Wessex support helicopter and a RN Hawker Hunter. Another new sheet out soon will be OO/HO battle flags for the US Civil War specially for use with miniature soldiers and for wargames. More detailed reviews of these new items will appear later.

## OTHER TRANSFERS

AFTER a lengthy pause, the French firm of ABT has now released several new transfer sheets, samples of which have come to us from the UK importers, BMW Models Ltd of Wimbledon. Number 100 is an attractive set of markings applicable to a Free French Lysander in September 1940 and the sheet includes a dashboard and the navigator's map as well as the aircraft markings themselves. The set is available in 1:72 scale for the Frog or Airfix Lysanders and in 1:48 scale for the Hawk model. No 101 is a set of markings for a F-51D of the South Korean Air Force (Col Dean Hess's machine) in 1952 and, again, comes in 1:72 scale for the Airfix kit or 1:48 scale for the Hawk kit. Finally, set 103, in 1:72 scale only, is intended for the Frog Me 109F kit and gives markings for a machine of 9/JG 2 in France in 1941, specifically Hofmann's aircraft. Optional markings on the sheet allow for Hofmann's markings to be applied to the Me 109E made by Revell, the aircraft he flew before the Me 109F. Each set comes with a printed reference sheet illustrating the marking positions and colour scheme. The 1:72 scale sheets cost 5s each and the 1:48 scale versions cost 10s. BMW Models can supply by post, postage extra.

The American firm of Exact-a-Cal have

produced some notable specialist marking sheets in the past and the latest to hand from them provides a mass of transfers for some very colourful 1-16 Rata finishes applicable to the Revell 1:72 scale model. Included are markings for three different Spanish Nationalist aircraft, three different Spanish Republican machines, and three Soviet, one Chinese, one Finnish, and one Japanese (captured) aircraft. Exact-a-Cal maintain their tradition of providing a lavish reference sheet, each aircraft being illustrated by tone drawings with brief descriptive notes of its history. Actual colour patches and mixing details for all colours needed are also given on the sheet. The set can be had from Exact Scale Hobbies, 97 James Street, Bloomfield, New Jersey 07003, USA, price \$1.50 (12s 6d) post paid.

## CHART-PAK

USEFUL item for modellers is a new range of adhesive tapes ready cut to narrow widths and produced in a great variety of colours by Chart-Pak. They are actually intended for indicating map positions, etc, but are just the job for use as window frames, canopy frames, and so on for models. They could also come in handy for masking in limited areas, cheat lines on ships and aircraft models, road markings on scenic layouts, and so on. Of the samples we received, the narrowest was  $\frac{1}{8}$  inch wide which is finer than most people can slice Sellotape and still get a constant width. This  $\frac{1}{8}$  inch width is particularly good for 1:72 scale aircraft canopies. The other samples we had were  $\frac{1}{4}$  inch wide in yellow and orange respectively. Prices range from 5s 9d to 8s 9d per roll. The rolls come rather like Sellotape rolls but, of course proportionately narrower. They are self-adhesive and ready for instant application.

Our samples came from Ham and Sewell, 172 Armada Way, Plymouth, who make Chart-Pak and full information and details of the range of thicknesses and colours available can be had from them to anyone who sends a S.A.E.

## NEW AIRCRAFT

LATEST release in the excellent Tamiya 1:100 scale aircraft kit series is a fine replica of the SAAB J35F Draken which matches the high standard set the remainder of the range in terms of accuracy, presentation, and quality. There is a very clear well-produced instruction sheet and markings are given for two alternative Swedish Air Corps aircraft. Price of the kit is 5s 11d.

From Frog comes a spectacular 1:72 scale offering in the form of Boeing B-47E jet bomber. As with most recent Frog kits this is basically the Hasagawa model issued under the Frog name and supplied with new transfers. The quality and accuracy of this kit is superb with rivet and panel detail discreetly and neatly done. The parts click together with great precision and, despite the model's size (about 18 inches long), assembly is quite straightforward and simple due to the clean lines

of the prototype. There is a full bomb load and two sets of transfers allowing the model to be finished as an aircraft of either the 301st or 380th Bombardment Wings. This is a first-class kit which should please jet enthusiasts. Its price at 49s 6d is a little high perhaps, but you get a very big and imposing model for your money. Both this kit and the SAAB Draken can be had from Jones Bros of Chiswick who supplied our samples. C.O.E.



New Fiat G.55 model in 1:72 scale is first in the Aliplast series.

## FROM ITALY

A new Italian firm has recently produced the first of a promised range of scale kits. The manufacturer is Aliplast and their first kit is a Fiat G.55 Centauro.

Although the box art on this model is not impressive the contents are. There are 32 parts accurately moulded in light grey plastic. Construction is very simple and the whole thing took no more than an hour to put together. The wheels do not retract, the flying surfaces do not move and the cockpit detail is sparse but this does not detract from a superb little model which is not on any other manufacturers' list.

The instruction sheet is printed in four languages including English and although the detailed constructional drawings leave something to be desired the average modeller will have no trouble in putting the kit together.

Four alternative sets of transfers are provided and the instruction sheet gives details of the camouflage patterns for each without stating to which unit they belonged. The markings are for the G.55 in Regia Aeronautica, Luftwaffe, postwar Italian air force and Mussolini's post capitulation air force.

There are few Italian military aircraft available in the popular 1:72 scale and Aliplast are to be congratulated on adding to the list most effectively. The box art details 12 other kits due to be made including the Reggiane RE 2001, Fiat BR 20, Macchi MB 326, Reggiane RE 2005, CANT Z 1007, Caproni Ca.311 Ansaldo SVA, Fiat CR 32, SIAI S.55, Reggiane RE 2000, Macchi MC 205 and CANT Z 501. We are told that the RE 2001 should be ready in about two months time.

So far Modeltoys of 246 Kingston Road, Portsmouth are one of the few importers of the currently released model. It retails for 11s 9d and they hold good stocks. There is no doubt that this excellent little model will be very popular.

A.W.H.

# Letters to the Editor

## Pro Patria

IT has always surprised me as to why the British have singularly been so modest about their own aircraft. If one were to look at the products of American, French and Japanese kit manufacturers one would immediately be struck by the great proportion of kits devoted to indigenous aircraft. This is not so with Airfix. It is indeed quite a shame that a Japanese manufacturer should be the first to introduce the Lightning F6 and the British Phantom into your country. It surprises me to see unimaginative aircraft such as the He 177, Dauntless and Helldiver being produced when there are so many successful British aircraft such as the Canberra, Meteor, Harrier, Sea Vixen, Javelin and Buccaneer still being neglected. (One must take into account that 90% of modellers do not have the skill to turn a NA39 into a Buccaneer or a P1127 into a Harrier).

I would vouchsafe that if the TSR-2 model had been in the home of every proud British boy or his father instead of the Airfix F-111, this proud example of British aviation technology would not have died such a shameful death.

Perhaps the fault lies more with the average British kit buyer. I see from your correspondence that much more interest is generated in Luftwaffe camouflage than in British. If I were a Britisher I'd certainly not buy a Concorde in Air France markings.

Y. S. Hsu, Singapore 21.

Fair comment, but not everyone would agree that the He 177, Dauntless, and Helldiver were 'unimaginative'—EDITOR.

## Mottle method

MOST modellers find it very difficult to reproduce the Luftwaffe 1939-45 mottle in which the colours merge into each other. After many experiments I found a simple method by using ordinary distemper and varnish. For an example I will describe the painting of the Me 262.

The undersides of the fuselage, wings and horizontal tail surfaces, as well as the sides of the fuselage up to a little below the canopy, are painted sky-blue with gloss or emulsion paint and left to dry. Then the top of the fuselage together with blotches on the wings and tailplane are painted with green distemper. There is no need to let the distemper dry before proceeding with the job.

A mixture of very thin green distemper is prepared and then applied to the sides of the fuselage and top of the wings and tailplane. This mixture is painted over the previous coat so as to produce a continuous coating.

Below: Subjects of two recent AIRFIX magazine conversions photographed by N. Lewis at Butterworth and referred to in his letter above. Legend on cheat line of RNZAF freighter now reads 'ROYAL NEW ZEALAND AIR FORCE' only. On the Mirage note the Sqn Ldr's pennant beneath the windscreen.

Letters to the Editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit of their choice. We are always pleased to receive your comments and pictures, which will be considered for publication. Submitted material and pictures can only be returned if accompanied by a stamped addressed envelope, and the Editor cannot accept responsibility for safe keeping of any such contributions, neither does he necessarily agree with comments expressed by correspondents in the letters columns. Please note that any letters anticipating a reply MUST be accompanied by a SAE or stamp.

the colour getting lighter (ie, the distemper getting thinner) the lower one gets down the fuselage. The same procedure is followed for the wings and tailplane.

The model is then left to dry, and one must be very careful at this stage to see that it is really dry before proceeding. Then the green distemper is covered with a coat of yacht varnish and left to dry.

Care must be taken when preparing the distemper because its colour darkens when it is coated with varnish, therefore it is recommended that the distemper should be of a much lighter shade than the actual finish of the aircraft, and it is better to practice a little on some scrap plastic to get the required shade.

Oliver Aquilina, Paola, Malta.

## Miniature grating

WITH reference to the Sherman BARV recently featured. I have found that plastic grating sold, I think in the Mersey series of model ship fittings, is ideal for the side catwalks on such BARV models as the Centurion and Sherman. It is easily cut to shape and being polystyrene, compatible with the adhesives used and adds that final touch of authenticity.

J. B. Church, Lymington, Hants.

## Recent conversions

AS I have just returned from the Far East, the accompanying photos might be of interest to readers making recent conversions from the magazine.

The photo of RNZAF Bristol Freighter was taken at Butterworth in Malaysia. As can be seen, there is a fern leaf in the centre of the roundels. There is a patch on the top of the cabin on the port side. Finally the lettering on the fuselage side has been altered recently.

The other picture shows Mirage A3-20 in late 1968. It is the squadron commander's aircraft. As you can see the red intake markings have been discontinued. Nose is matt black to the first panel line and then

eggshell black to just in front of cockpit cover. Edge of intake and 'Bullet' is duck egg green. The last two digits appear on each main wheel door and nosewheel door. A portion of the top of the fin is light grey with black edges. Tip of the wing tank is duck egg green.

N. Lewis, Coventry, Warks.

## Weathering

CONGRATULATIONS on Airfix's fine kits and magazine. In my opinion, the greatest virtue of the many possessed by Airfix models, is the excellent fit of the parts. Recently I constructed the Ferrari 250 LM. The parts went together so well that joint lines were almost invisible.

Other readers may be interested in a method I have used many times to achieve wear or 'weathering' on model aircraft. By brushing boot polish aft of exhausts, radiators, etc, stains can be realistically reproduced. I used brown polish on the upper wing surfaces of the Airfix DH4 and the result was an extremely realistic, fabric-like appearance. It can also be used over gloss paint to give a semi-gloss finish.

John Free, Bondi, NSW, Australia.

## Cutting polystyrene

IN his article in the April issue, Norman Simmons suggested the use of a bread saw and a sharp knife to cut expanded polystyrene. May I offer a far less messy method of cutting this useful material. I have used this technique many times in covering ceilings with polystyrene tiles, where one cannot afford to have jagged edges to the tiles, as result when a bread saw is used.

The only tools required are an old knife and a straight edge (if fairly long straight sections are to be cut). The line of the required cut is marked out on the polystyrene, using a Biro or a marker pen. The knife blade is then heated over a gas ring until it is red hot. The hot blade cuts the polystyrene most efficiently by melting it. Cut the straight sections first, placing the straight edge on the part which is to be cut out so that, should the knife slip, only the waste part will be damaged. When making a long, straight cut, cut quickly, for the knife cools down fast—as soon as you feel some resistance to the knife blade, stop and reheat the blade.

For curved sections, formers could be made, but it is hardly worth the bother, for the material is quite easy to cut freehand. For curved sections, then, cut freehand to within  $\frac{1}{4}$  inch of the line. Then go slowly over the whole line, touching the hot blade

Continued on next page







Above: Spot the difference. Reader D. M. Warden sent these two views to illustrate the canopy shaping variation on Harvards used by the British. RAF Mk I N7033 (right) is contrasted with a US civil register machine (Newark Air Museum photos).

## Letters—continued

against the waste polystyrene and melting the excess away. With a little practice, this technique is easily learned. When reheating the blade, it is a good idea to scrape any molten polystyrene off the blade, for if this starts burning it gives off a very sooty smoke.

As an alternative to a hot knife, a piece of resistance wire heated by a current from a power pack or transformer could be used. The wire could be stretched on a simple frame and could be used in fret-saw fashion. Malcolm Oliver, Ruislip, Middx.

## Harvard details

AS ONE of the people in Britain who is very interested in the North American Harvard, it was with some interest I received from a friend a copy of the AIRFIX magazine article on converting the Airfix Harvard into a Harvard one, I realize the article is now some years old (January 1966) but it is only recently I have started to take the magazine as a monthly.

The main point of my letter is that the conversion stops short of being complete; the fault lies in the cockpit canopy, the correct shape of which is shown in the photo I have included of N7033. No British Harvard of any mark had to the best of my knowledge a rear canopy as shown in the Airfix kit, the kit being an American machine using the form of canopy shown in the photo of N9813C I have included. This as a matter of general interest covers Canadian-built Harvards which also have the rear canopy style of the British used aircraft. The other point is that the small outlet just behind the cowl on the Mk I is far too low on the model converted as is plainly seen from the photo which is opposite it on the same page. Hope my observations may prove of help. D. M. Warden, Edinburgh.

## Scale rule

I HAVE read your excellent magazine for many years, and would like to pass on a snippet of useful information to 1:72 and possibly 1:76 scale model builders.

The printing industry has for its standard type measurement a 'Pica'. This is to within three decimal figures of 1/6 of an inch. It is further sub-divided into 12 points. Most compositors and machine men use a rule, called a typescale which is graduated in inches, picas and points. These type scales can be obtained from any printers supplier.

Its usefulness to 1:72 scale model builders is obvious. A foot equals a pica. Inches equal points. A wingspan of 50 feet 3 inches becomes 50 picas 3 points. Therefore any measurement can be quickly and accurately drawn to 1:72 scale. The rules are made of stainless steel and cost about 15s. They are twelve inches long and have 72 x 1/4 picas marked on them.

I hope your readers will find this tip handy, and I wish the magazine a long and successful life.

R. J. Fleming, Atherton, Lancs.

## Christie model

AS a result of reading your informative series on the T-34 by John Milsom in the AIRFIX magazine, I became interested in the T-34 family, the BT series, and the parent design of both, the T3 Medium Christie Tank. This led me on to make a comparatively simple scratch-built model of the Christie tank. I took scaled down measurements from the *Armour in Profile*, Number 4, using idlers, driving sprockets and modified road wheels from the very versatile Airfix T-34 kit.

The photo shows the Christie model in



the road-running pose without its scratch-built tracks.

As my interest is in scratch-building I collect Bellona Prints. On seeing the drawing of the PzKpfw II in Bellona Prints series 17 I decided to build this tricky but worthwhile little model. The road wheels can be made from JS11 wheels with 6 mm paper punchings over the front face. The driving sprockets come from parts 7, 8, 24 and 23 in the '88' kit. Finally the idlers and track come from the Panther kit.

James Driver, Bromley, Kent.

## FAA memories

THE rather unceremonious arrival of JV884 on the deck of HMS *Searcher* (photo on page 294 March AIRFIX magazine) brought back amusing memories. No one was hurt, the batsman, on whose position aircraft B is resting, had fled across the deck and claimed an all time record for the distance. The pilot, fairly well up the squadron hierarchy, as we had our aeroplanes in alphabetical order, had a red face for days. Aircraft A had landed a few moments before (no 'arrived' would be better) and the deck party had just cleared up the mess when aircraft B did this!

The rest of the squadron—22 other brand new, just air-tested Wildcat FM2s had to stooge around the sky off Ceylon on that day August 18, 1945.

In all fairness we had done no deck landings for months, having been ashore since serving in Scapa Flow, learning tactical reconnaissance and rocket firing. As Bob Jones says—FM2s had zero length rocket rails and also carriers for bombs or drop-tanks under each wing root.

He is wrong however—882 squadron had no squadron code, IC is quite fictitious—only the aircraft letter was carried aft of the roundel—blue and white incidentally—and at 3 and 9 o'clock on the cowl.

These were the last Wildcats in RN Service and a few days after the photo was taken we flew all our aeroplanes to a store in South India as Lease-Lend had finished. As far as I know they were left there to rot.

R. Guy Williams, Long Ashton, Bristol.

Checking with Robert C. Jones, we are assured that 882 Sqn did have the squadron code as given in the drawing. Memories dim with the years and Jones thinks that the code may not necessarily have been applied to all aircraft in the squadron.—EDITOR.

## Book boob

MY attention has just been brought to your very kind and generous review of my recent book *Blackburn Aircraft Since 1909* (Putnam) published in your January issue.

On closer inspection however I didn't know whether to laugh or cry because someone has dreamed up the most fantastic error and I must really ask you to publish a correction because, as it is, it isn't a particularly good advertisement for my accuracy!

Perhaps you will break the news to your reviewer that the Belfast was designed and built by Shorts and is nothing whatever to do with Blackburn, and is not mentioned at all in the book.

I do hope you will be able to put a note to this effect in your next issue as Putnam readers will think I've taken leave of my senses when they see this! You mean Beverley of course, not Belfast.

A. J. Jackson, Leigh-on-Sea, Essex.  
A slip for which we apologise.—EDITOR.

## 'Instant' camouflage

I HAVE found a method for representing the 'instant' camouflage, now being applied to Wessex helicopters, which was featured in the March '69 edition's 'In the Air'. I use powder colour. It can be bought from most good art shops in small pots for about 1s but I scrounged my supply off the art master at school.

The powder colour is simply mixed with water to the right consistency and applied like ordinary paint. It dries flat matt but what makes it so good is that it can be removed again when its use is over by the wipe of a wet rag. This completely removes the powder paint (except for awkward crannies) to leave the surface as it was before the paint was applied.

This 'wipe off' property may also be utilised on other aircraft so that they can change their camouflage at will and thus be used in any theatre of war. This can be done using the ordinary enamels but numerous coats of paint cover up fine detail. The powder colour method does not.

N. B. Mecredy, Gillingham, Kent.

Chris Ellis takes a short break from his usual 'Military Modelling' feature this month. Back next month. In answer to recent queries, Pz III conversions were featured in our May, 1964, issue; sorry but we can't supply this issue any more.

AIRFIX magazine

# photoPAGE

More rare pictures from readers with captions by Michael J. F. Bowyer. A free Airfix kit is awarded for every picture published, but please note that there is usually a delay of some months before publication due to the limited space at our disposal.

Key: (1) Two Reggiane Re 2001 at Ravenna airfield, early 1942. They belonged to the 150° Squadriglia (2° Gruppo CT of the 6° Stormo). The camouflage is dark green upper surface with under surface stone grey. The Squadriglia number (150) is pale grey while the aircraft number (6 on the first aircraft) is red. There is the usual white identification band. The spinner and the front part of the cowl are presumably yellow. On the fin there is the Reggiane trade mark. Note the different position of the Savoy coat of arms on the two aircraft: at the centre of the white cross on the first, on the upper part of the cross on the second, though barely visible. Picture by Giuseppe Ghergho.



Key: (4) From Bob Hall comes this view of a Fortress B-17G in post-war guise in Germany, about 1947. Note removal of chin and mid-upper turrets. Coded XK-M, serial 48846, it belongs to 301 Bombing Group. (5) Beaufighter X RD702 seen at Hal-Far, Malta, on a delivery flight to Turkey in 1947. It retains RAF serials and grey/green camouflage but with Turkish emblems. Picture by W. P. Brown.



Key: (6) Interesting rarity is this Hudson ambulance aircraft of the RAAF, A-16-2, probably in Borneo or the Halmaheras Islands in 1945. Unit is unknown. Standard RAAF finish with added red crosses. Picture by David Vincent. (7) Martinet target tug PW947 of 728 Fleet Requirements Unit, Royal Navy, at Hal-Far, Malta, in 1947. It is silver with black/yellow striped undersides. Black H was later painted on fin. Note pre-war style Type A roundels. (8) Also at Hal-Far in 1947 was this white and grey Wellington GR XIV of 38 Sqn, RAF, complete with C Type roundels, underwing serials, and squadron crest on nose. (9) Another 728 FRU aircraft was this ex-RAF Baltimore, one of several in various tatty colour schemes used for general hack and mail and transport duty at Hal-Far in 1947. 'Royal Navy' is added above serial and an H was later painted on the fin. This machine has a silver painted or bare metal lower fuselage. (10) Walrus II W2757 finished all silver with pre-war style roundels at Hal-Far in December 1946 where it was briefly the personal aircraft of Commander (Flying). Pictures 7-10 all from W. P. Brown.



August, 1969



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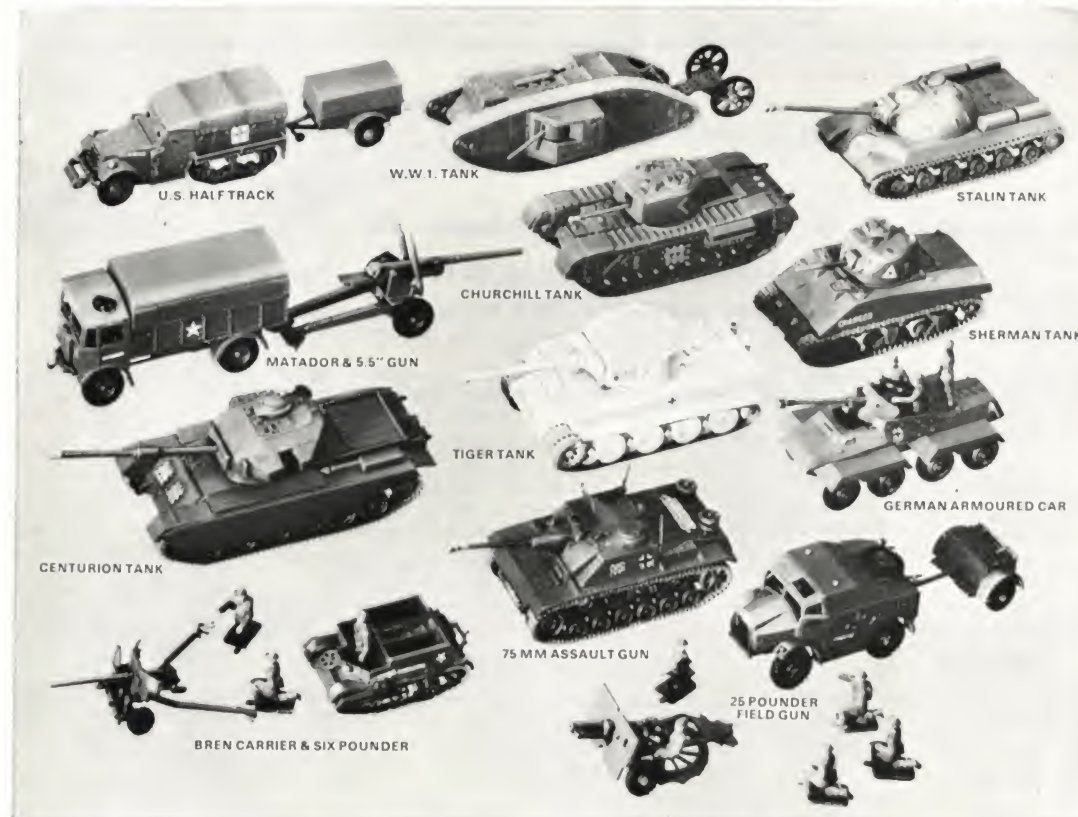


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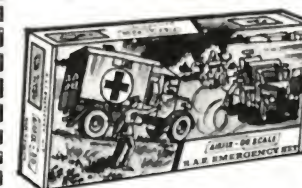
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